DxMONITOR

Animal Health Report

Inside this Issue

Summer 1993

The DxMONITOR Animal Health Report is distributed quarterly as part of the Veterinary Diagnostic Laboratory Reporting System (VDLRS). The VDLRS is a cooperative effort of the American Association of Veterinary Laboratory Diagnosticians (AAVLD), the United States Animal Health Association (USAHA), and the United States Department of Agriculture, Animal and Plant Health Inspection Service (USDA:APHIS). The purpose of the DxMONITOR is to report trends of confirmed disease diagnoses and animal health data collected from veterinary diagnostic laboratories and the USDA:APHIS.

Caution should be taken when extrapolating information reported in the DxMONITOR due to the inherent biases of submitted specimens. Trends should be interpreted with care. An increase in the number of positive tests for a given diagnosis/agent may be the result of a true increase in prevalence, however, it may only reflect a new State testing requirement, a heightened awareness of the condition, or an increase in the number of laboratories reporting data.

For this issue, the disease reporting period for new data was January 1, 1993 through March 31, 1993. Data have been reported by diagnostic laboratories in the States indicated on the inside back cover, from the National Veterinary Services Laboratories (NVSL), and from the APHIS:Veterinary Services program staffs.

Results are now presented as percent positive rather than number positive and negative to facilitate comparison among regions. Laboratory reported diseases in Section I are reported as percent of tests. Diseases in Sections II, III, and IV are reported as percent of accessions. Increases in denominators may be a reflection of the addition of new labs and/or labs reporting additional diseases not previously reported.

Send all correspondence and address changes to:

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DxMONITOR Animal Health Report
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Fort Collins, CO 80521-2586
(303) 490-7800

Lab Notes

This section presents short descriptions of current investigations, outbreaks, or events of potential interest to diagnostic laboratories. The purpose is to provide a forum for timely exchanges of information about veterinary diagnostic laboratory activities. Submissions from nonparticipating laboratories are welcome.

Porcine Reproductive and Respiratory Syndrome (PRRS) Virus in Swine

The Veterinary Diagnostic Laboratory Reporting System (VDLRS) has begun to collect data on PRRS from participating laboratories. The criteria for diagnosis are virus isolation or antibody detection by indirect fluorescent antibody (FA). Results will be presented in the Lab Notes until sufficient information is collected to warrant inclusion in Section I on Selected Diseases. The percents positive were CL 26.0, HI 0.0, MN 14.1, NC 25.6, SC 5.3, SE 42.9 and SW 0.0 (Table 1).

PRRS Virus
October, 1992 through March, 1993

Region	Positive	Total
CL	249	959
HI	0	11
MN	10	71
NC	651	2541
SC	1	19
SE	9	21
SW	0	2

Table 1

Leptospira Abortions in Horses

In the first quarter of 1993, the California Veterinary Diagnostic Laboratory System (CVDLS) has seen sporadic cases of equine abortion of mid to late gestation fetuses. In separate cases, the serologic response in the dams included elevated titers to *Leptospira pomona* (1:1600 to 1:6400), *L. gryppotyphosa* (1:25,600), and/or *L. bratislava* (1:800 to 1:3200). An outbreak of *Leptospira* abortions occurred in horses (12 of 60 to date) that had been caught in floodwaters in Southern California. The abortions began a few weeks after the flood and continued for approximately one month. Fetal kidneys were positive for *Leptospira* spp. and serologic titers of greater than 1:204,800 to *L. bratislava* and 1:25,600 to *L. pomona* were seen.

Contact: Dr. Sharon Hietala, California Veterinary Diagnostic Laboratory System, Davis, CA, (916) 752-4408.

Equine Influenza Virus in California

Submissions of as many as 35 horses with spiking fever and mild respiratory signs have been made to the CVDLS. Sero-conversion to Equine Influenza Virus (EIV) was seen in vaccinated horses (A-2 only) and/or evidence of exposure to EIV (A-2 Alaska or related virus) was seen in non-vaccinated horses. There was no age difference in the affected and non-affected horses and there may have been a common exposure related to a show barn in a number of the cases.

Contact: Dr. Sharon Hietala, California Veterinary Diagnostic Laboratory System, Davis, CA, (916) 752-4408.

Eastern Equine Encephalitis in Florida

Florida's 1993 Eastern Equine Encephalitis (EEE) season officially started on January 13, 1993, when a case was diagnosed serologically in a horse located in the Daytona Beach area (Central Florida).

Three additional cases were diagnosed during the quarter. In addition, viral isolations were made from an emu in January and a horse in March. All of the cases diagnosed were in the central Florida area. The incidence of cases diagnosed this year is about the same as the number of cases diagnosed during the first quarter of 1992 and 1991.

Contact: Dr Harvey Rubin, Florida Department of Agriculture, Bureau of Diagnostic Laboratories, Kissimmee, FL (407) 846-5200.

1992 Ohio Rabies Summary

In 1992, the Ohio Department of Health tested 2,706 animals for rabies. Fourteen animals from ten counties were confirmed rabid. Ten were bats, three were skunks and one was a raccoon. This compares with Ohio's previous 5-year average of 13 rabid animals detected per year (range from 6 to 20).

Of considerable interest in 1992 was the report of a rabid raccoon. It was confirmed by CDC to be infected with raccoon-strain rabies, which had never before been identified in Ohio.

Raccoon-strain rabies is responsible for an epizootic of rabies in the Northeast United States. This particular strain originated on the Virginia-West Virginia border in the early 1970's and has primarily traveled eastward, through Pennsylvania into New Jersey, New York, and now Massachusetts. It is slowly traveling westward towards Ohio as well, at a rate of about one county per year.

Editor's note: Wisconsin reports examining 80 (three positive) animals for rabies in January 1993 and 78 (one positive) in February. The New England 1992 rabies summary was included in the Spring 1993 Lab Notes.

Contact: Vector-borne Disease Unit, Ohio Department of Health, Columbus, OH (614) 752-1029.

Pseudorabies State Classification Status

Between October 1, 1992, and March 31, 1993, Pennsylvania advanced to Stage II. Minnesota, Indiana, and North Carolina had counties in both Stages II and III. Oklahoma, Tennessee, and Georgia advanced to Stage III; Arizona and Arkansas advanced to Stage IV; and Alaska, Utah, and Connecticut advanced to Stage V. As of May 21, 1993, Michigan had counties in both Stages II and III. Delaware, Kentucky, and Louisiana had advanced to Stage III, and Idaho and Montana had advanced to Stage IV.

Contact: Dr. Joe Annelli, USDA:APHIS:VS:Swine Health Staff, Hyattsville, MD (301) 436-7767.

Weak Calf Syndrome

Several veterinary diagnostic laboratories across the Midwest have experienced increased submissions of neonatal calves for necropsy since the first of the year. Cattle producers and veterinarians have reported increased mortality in newborn calves compared to previous years. Many of these deaths are being attributed to "weak calf syndrome."

Affected calves were either born dead, born too weak to nurse, or normal and nursed, but failed in 2 to 3 days. Those dying after nursing had high rates of diarrhea, pneumonia, and navel ill. Etiology is unknown, but it is generally held to be the result of prolonged severe cold and inadequate late gestational nutrition in the dam.

The DxMONITOR was interested in the findings of our participating laboratories in relation to this syndrome. Missouri reported that the mean number of monthly submissions involving bovine neonates was similar to previous years for December 1992 and January 1993, but increased significantly from February to April 1993 (Table 2). They do not routinely use weak calf syndrome as a diagnosis. Illinois reported two submissions which they recognized as weak calf syndrome in February, 24 in March, the majority occurring between March 12 and March 31, and four in April. Nebraska, Iowa, Kansas, North Dakota, and South Dakota all indicated increased neonatal submissions, but were unable to provide case numbers because they also do not routinely use weak calf syndrome as a diagnostic code.

The most consistent pathologic findings were subcutaneous edema and hemorrhage, especially along the metatarsal. Secondary findings included pneumonia, enteritis, and septicemia.

The Centers for Epidemiology and Animal Health (CEAH) will be conducting a survey of Midwest producers this July to collect more information on calf death losses. Results pertaining to weak calf syndrome will be included in the Fall DxMONITOR.

Contact: DxMONITOR, Fort Collins, CO (303) 490-7863

Missouri Neonatal Calf Submissions

Month	Total Submissions This Season
Dec 1992	32
Jan 1993	33
Feb	84
Mar	146
Apr	39 (1st 2 wks only)

Table 2

I. Patterns of Selected Diseases

Section I contains information on diseases of interest as designated by List B of the Office International des Epizooties (OIE). The purpose of reporting these data is to monitor confirmed cases of specific diseases on a State-by-State or regional basis so that national distributions can be mapped and evaluated.

Key to Figures in this Section:

- In some cases, the denominator is a minimum because some laboratories were not able to determine the total number of negative tests performed.
- Data are presented by region or State of specimen origin and quarter year of specimen submission. The numbers presented above each bar represent number positive over total tests.
- Results reported with dates not corresponding to the current quarter are the result of increased testing times or related to reporting times.
- Abbreviations for regions used in the figures are:

AK = Alaska	MN = Mountain	SC = South-Central
CL = Central	NC = North-Central	SE = Southeast
FL= Florida	NE = Northeast	SW = Southwest
HI = Hawaii	PA = Pacific	UNK = Unknown
ME = Mideast	PR = Puerto Rico & U.S. Virgin Islands	

☐ Bovine Brucellosis

Source: Dr. Mike Gilsdorf
USDA:APHIS:VS
Cattle Diseases Staff
(301) 436-4918

Reactor herd = Herd with at least one case of brucellosis confirmed by serology or culture.

Definition of State Classifications:

Class B: More than 0.25 percent, but less than 1.5 percent of all herds infected.

Class A: No more than 0.25 percent of all herds infected.

Free: No infected herds under quarantine during the past 12 months.

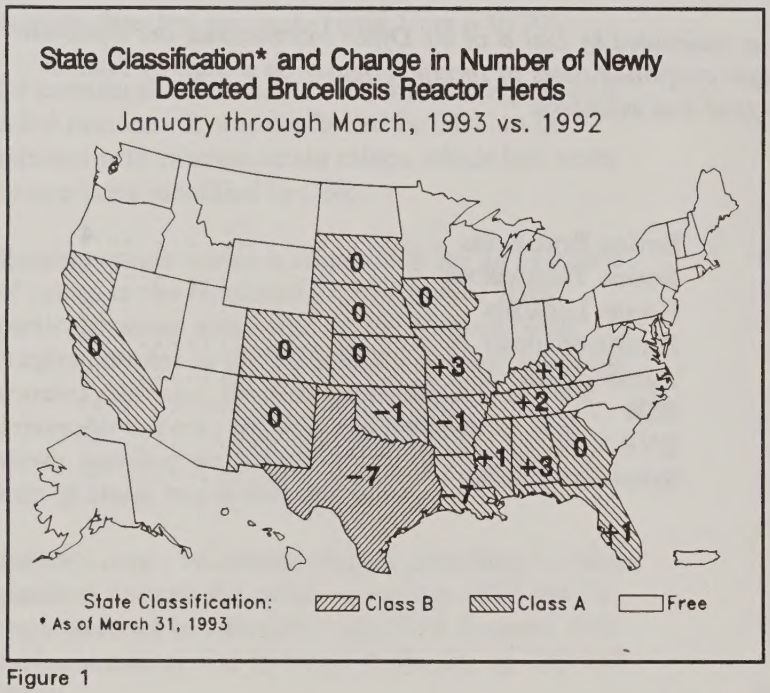

Figure 1

Oregon's State classification was changed from Class A to Free for Bovine Brucellosis during the first quarter of 1993. Missouri, Kentucky, Tennessee, Mississippi, Alabama, and Florida had increases in the number of newly detected herds while Texas, Oklahoma, Arkansas, and Louisiana had decreased numbers (Figure 1).

For the entire U.S., there were 96 newly detected reactor herds from January through March of 1993, four fewer herds than were newly identified from October through December of 1992. Only Texas (53 herds) had more than 10 newly detected brucellosis reactor herds during the quarter (Figure 2).

There were fewer brucellosis reactor herds detected in the first quarter of 1993 than during the same quarter of 1992. Although the total number of infected herds for Texas was greater for the first quarter of 1993 than the first quarter of 1992, the rate of detection has dropped in Texas over the last three quarters (Figure 3).

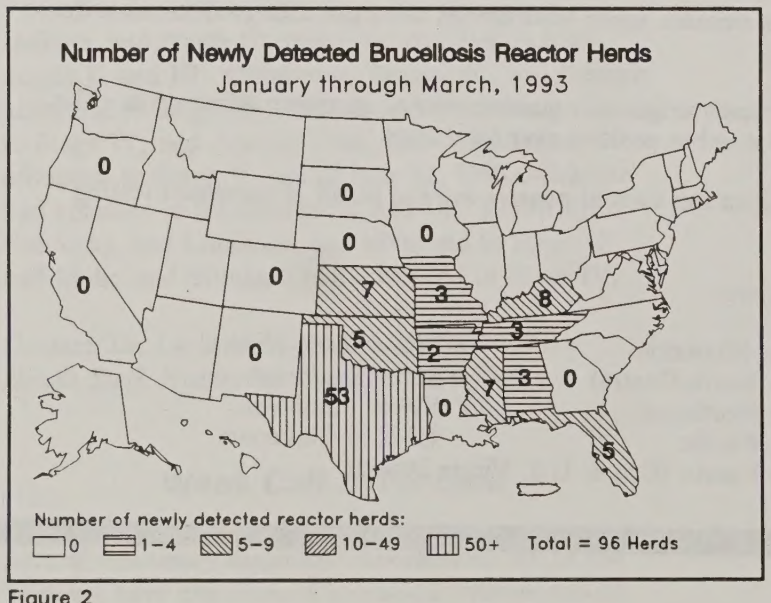

Figure 2

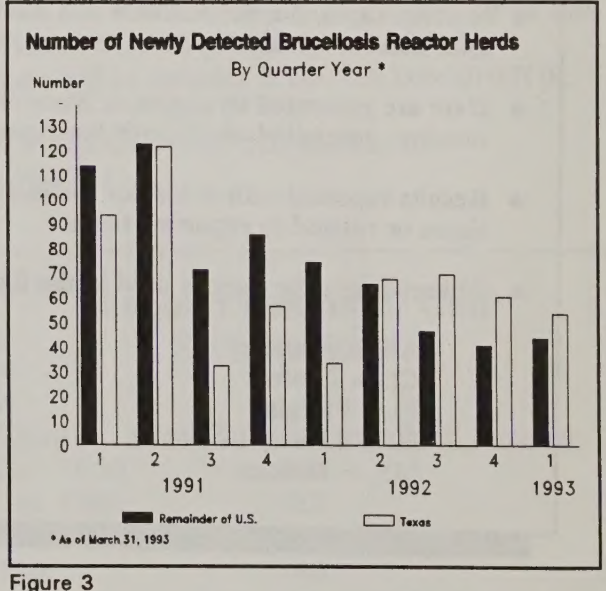

Figure 3

☐ Bovine Tuberculosis

Source: Dr. J. S. VanTiem
USDA:APHIS:VS
Cattle Diseases Staff
(301) 436-8715

Infected = Laboratory confirmed existence of bovine tuberculosis, either through *Mycobacterium bovis* isolation or positive histopathology.

Exposed = Animals directly associated with infected animals.

No new bovine herds have been identified as infected with tuberculosis since October 1, 1992. A total of nine bovine herds were infected with *M. bovis* in the U.S. as of March 31, 1993. Changes since December 1992 include the reduction of two herds in California, one in New Mexico, and one in Texas (Figure 4).

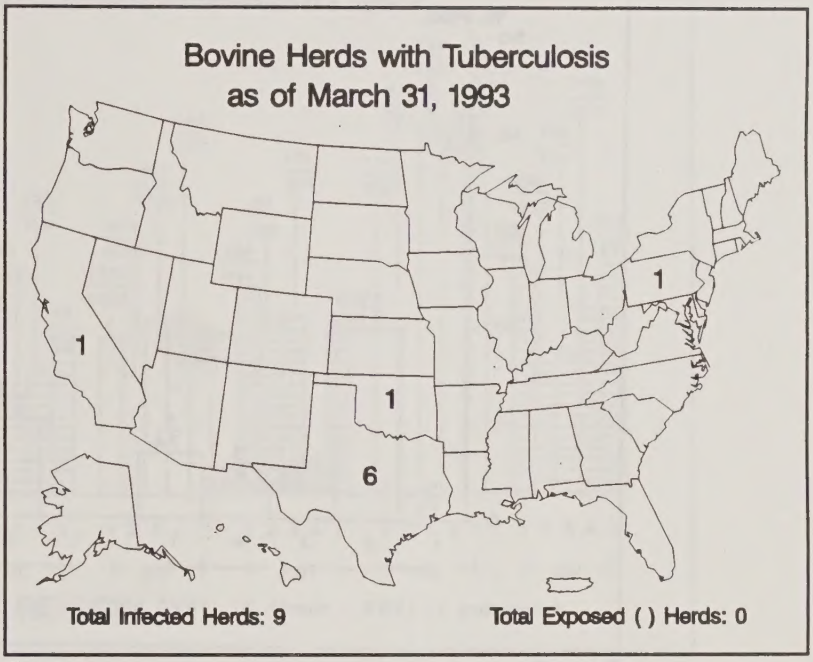

Figure 4

Seven captive cervid herds were known to be infected with bovine tuberculosis as of March 31, 1993. One newly infected herd was identified in Texas. There are two herds with pending status, one in South Carolina and one in Montana (Figure 5).

Pending = Herd evaluation still in progress.

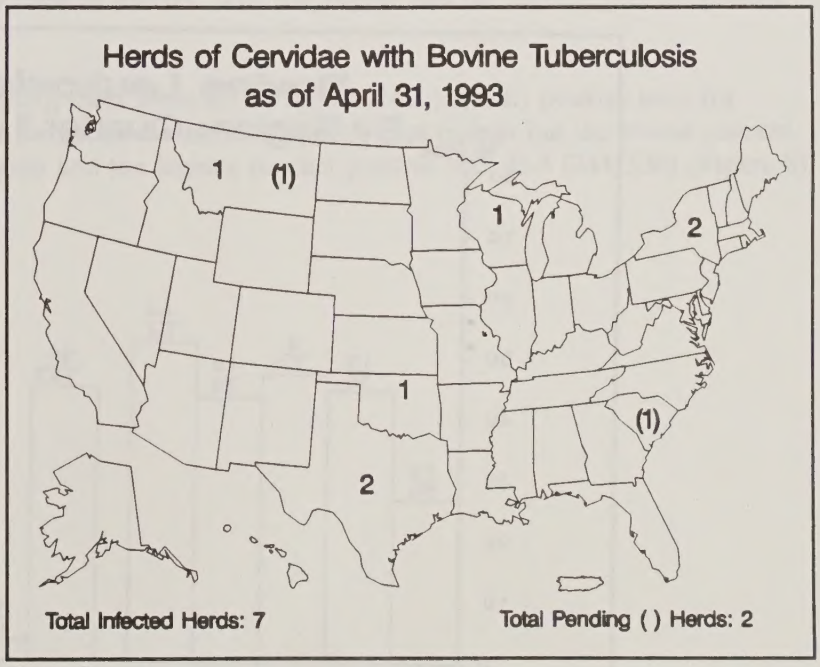

Figure 5

☐ Bovine Leukosis

Criteria: AGID or pathology.

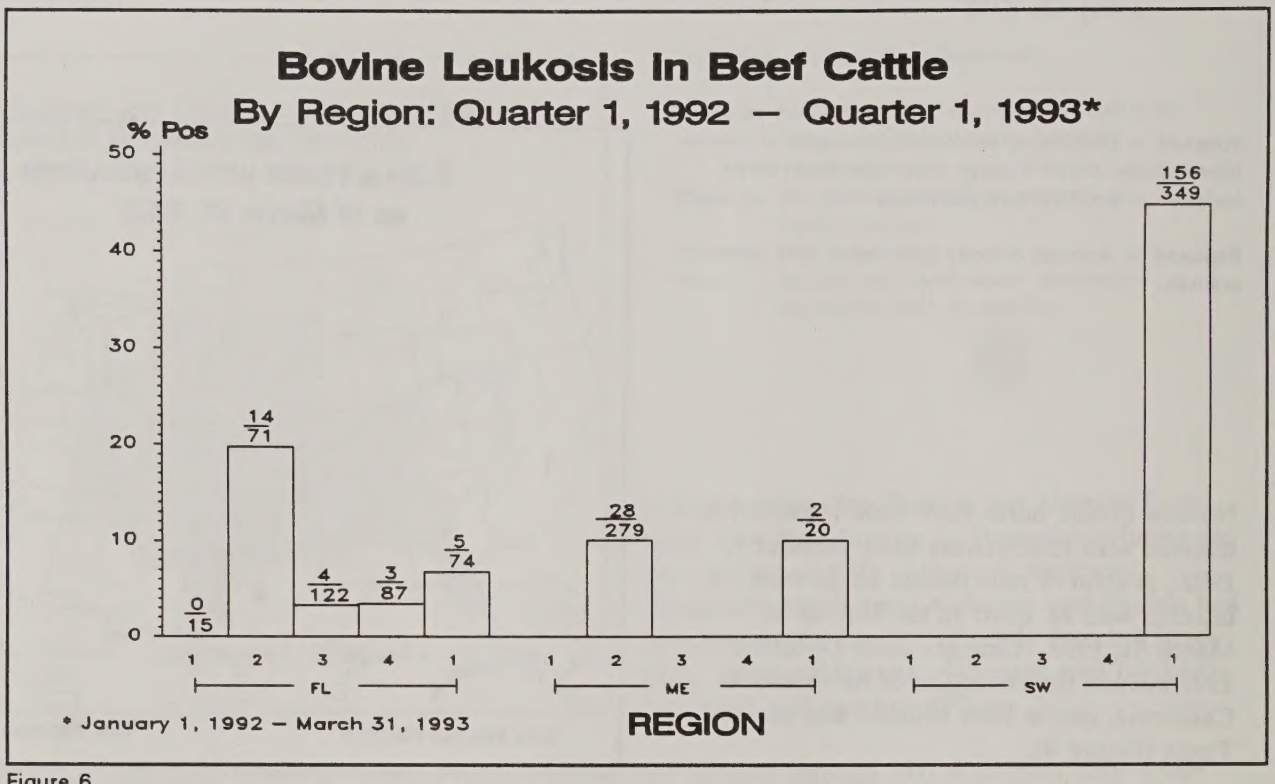

Figure 6

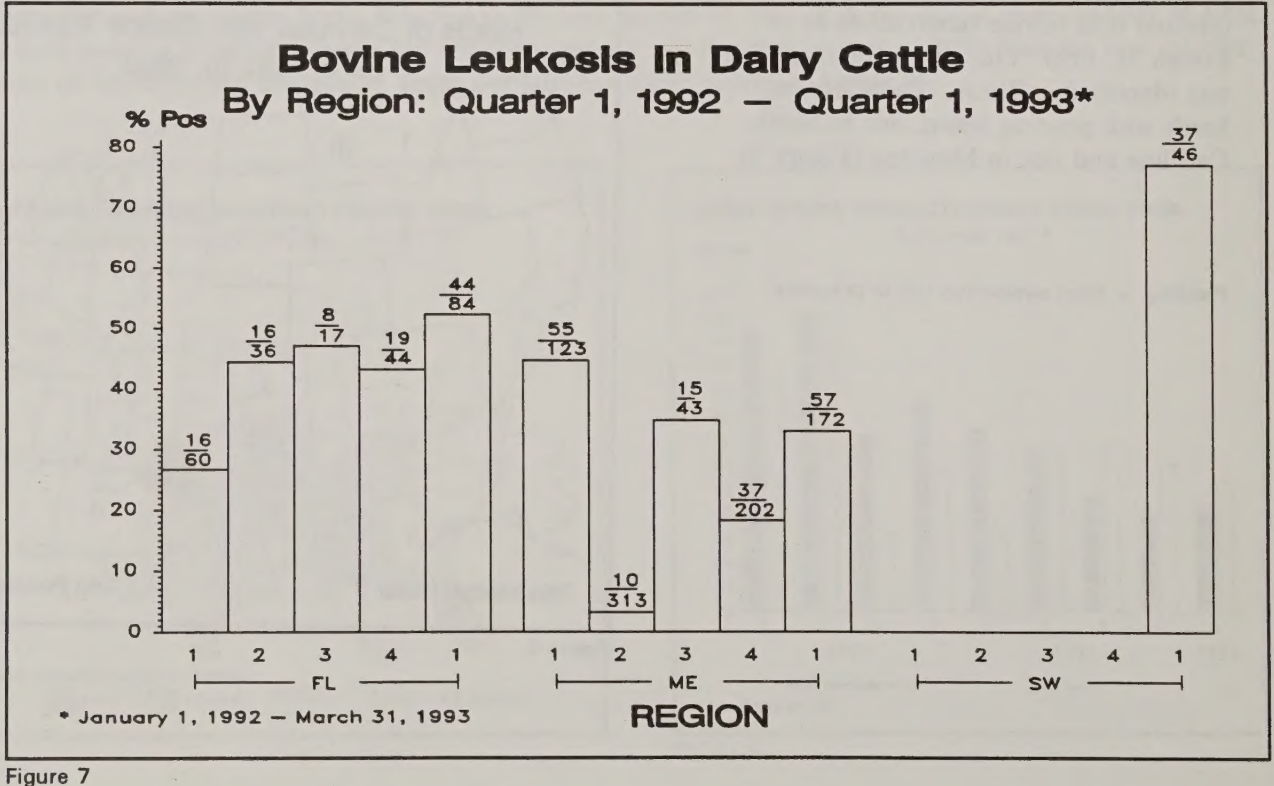

Figure 7

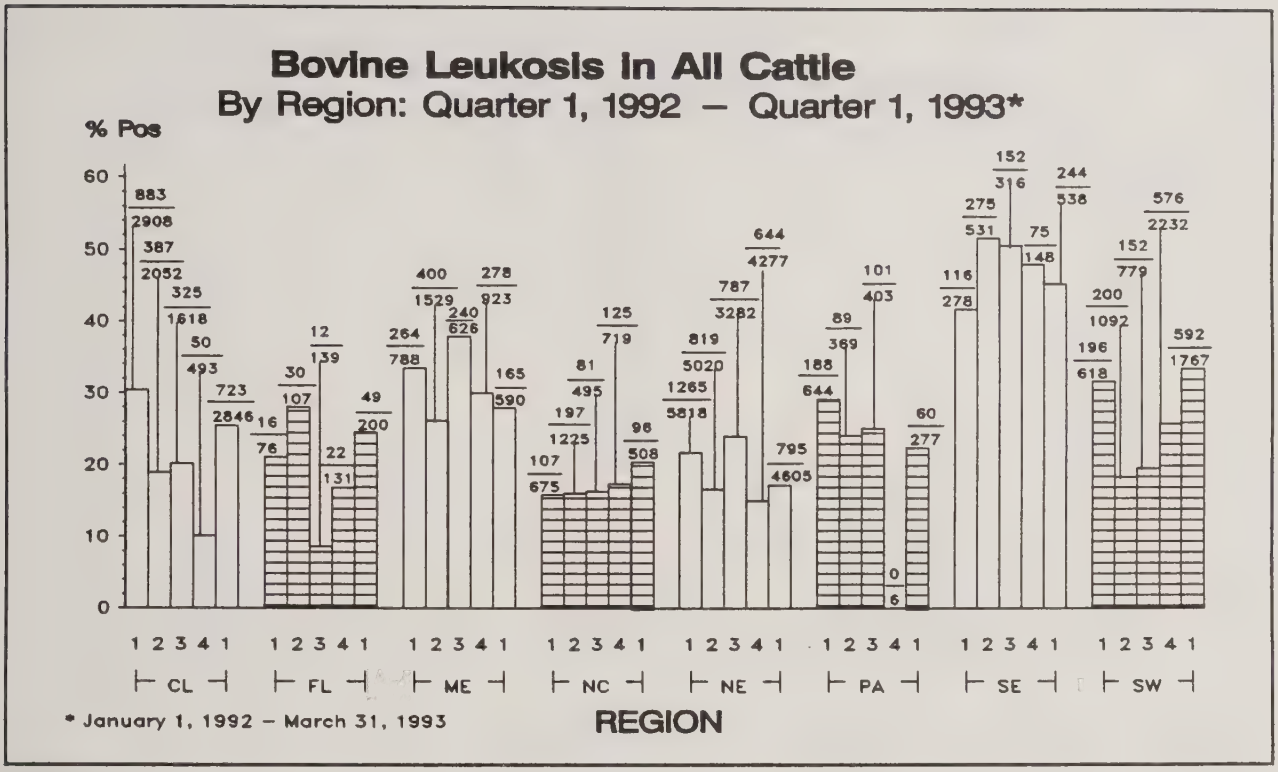

Figure 8

Three regions reported Bovine Leukosis results by class of animal. The SW region had the highest percent positive for beef and dairy (Figures 6 and 7).

For the first quarter of 1993 (January through March), there were 2,759/11,410 (24.2 percent) positive tests for Bovine Leukosis. The Northeast (NE) region had the greatest number of positive specimens but the lowest percent positive (795/4605, 17.3 percent), while the SE region had the highest percent positive with 45.4 (244/538) (Figure 8).

☐ Paratuberculosis

Criteria: Culture, histopathology, AGID, ELISA, CF or DNA probe.

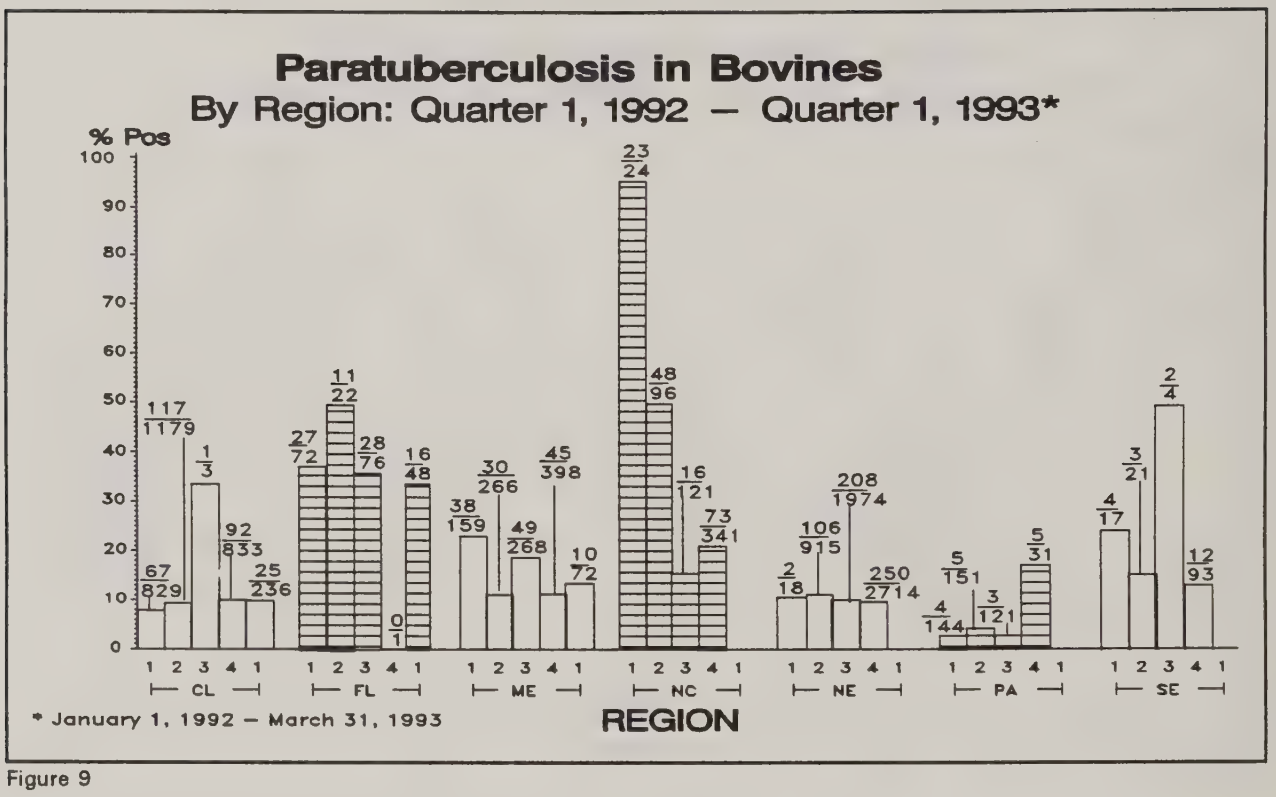

Figure 9

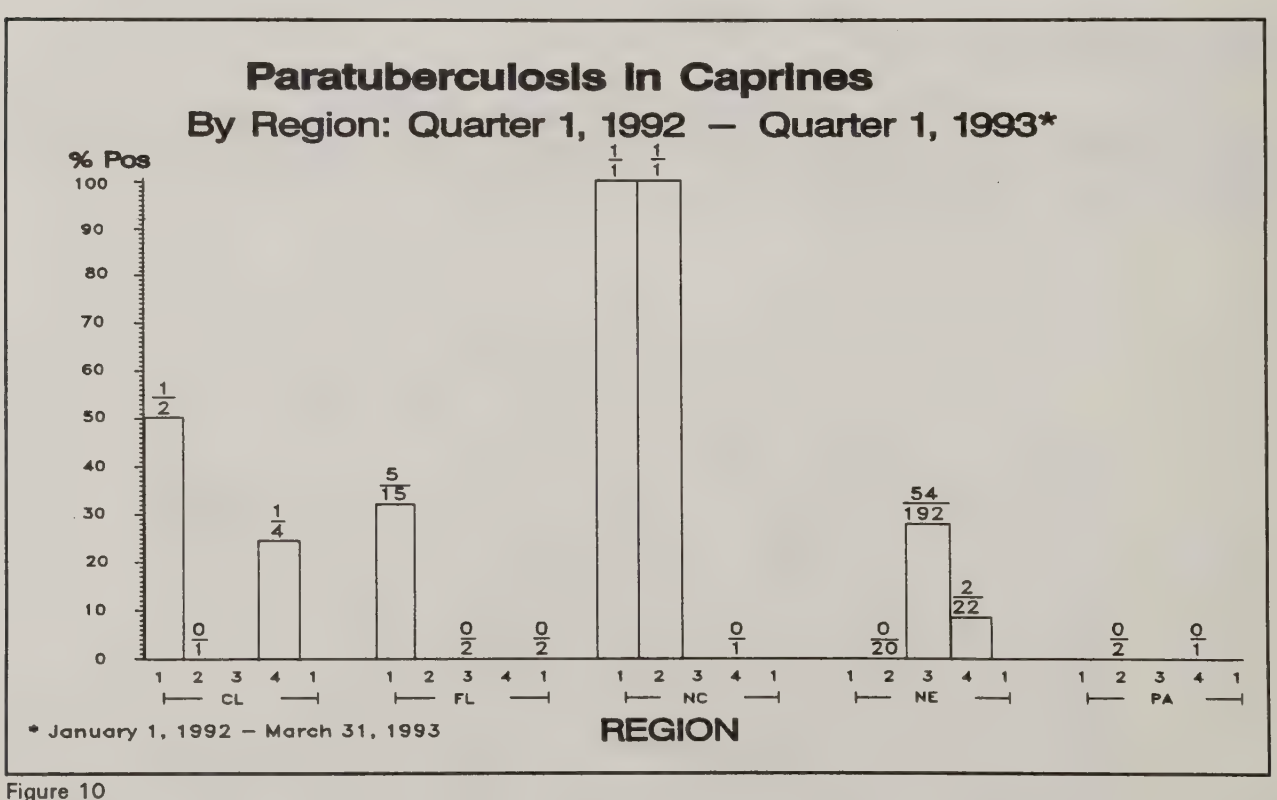

Figure 10

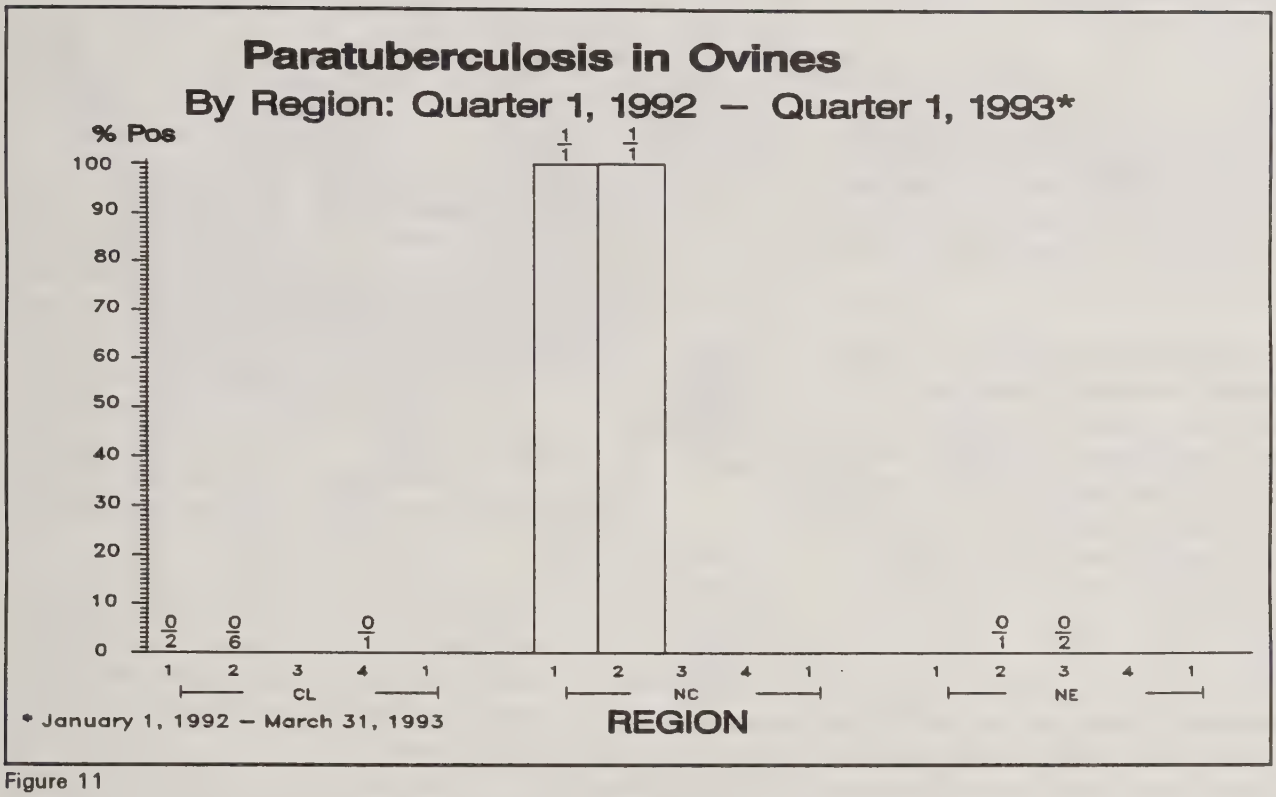

Figure 11

Culture results for Paratuberculosis are reported through December 1992. Results for January through March 1993 are serology only. During the fourth quarter of 1992, 487 out of 4,477 (10.9 percent) bovine cultures tested positive for Paratuberculosis. Overall, a total of 402 serologic tests were reported during the first quarter of 1993 with 54 (13.4 percent) positive (Figure 9). Since January 1, 1992, 65 out of 266 (24.4 percent) caprine cultures were positive and two out of 14 (14.3 percent) ovine cultures were positive for Paratuberculosis (Figures 10 and 11).

☐ Pseudorabies

Source: Dr. Joe Annelli
USDA:APHIS:VS
Swine Health Staff
(301) 436-7767

A total of 439 swine herds were detected with PRV during the first quarter of 1993 (Figure 12). That was 44 percent fewer newly detected herds than during the first quarter of 1992 (789) and 0.7 percent more than the fourth quarter of 1992 (436).

The most significant decreases from the previous report occurred in Iowa and Minnesota, while the largest increases occurred in Illinois, Indiana, and North Carolina. The 226 newly detected herds in Iowa were fewer in number than in any of the last four quarters in that State. The number of newly detected herds in Iowa has decreased in each of the last four quarters (Figure 12).

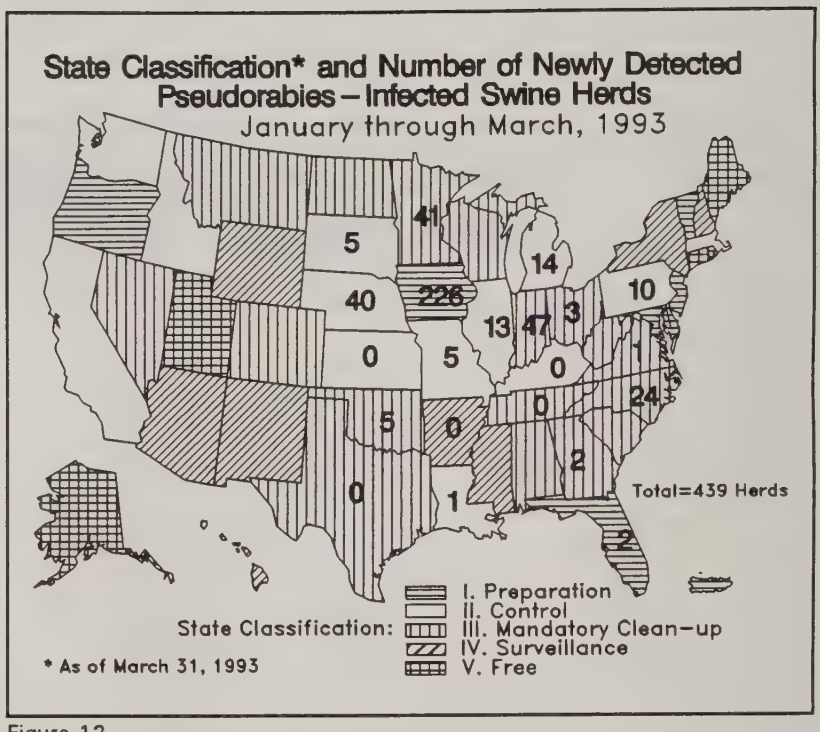

Figure 12

Iowa now has 55.8 percent of all the known PRV-infected swine herds in the U.S. (3,993 out of 7,151). The total number of known infected herds in the U.S. decreased by 5.1 percent over the last year, from 7,539 to 7,151 (Figure 13). The total number in States other than Iowa decreased during that period from 3,745 to 3,158. The swine herd clean-up rate has steadily increased for all States since 1990 (Figure 14). For the first quarter of 1993, the overall herd clean-up rate was 83 percent, with 5,915 of the known infected herds on clean-up plans. State classification changes are included in Lab Notes (pg. 2).

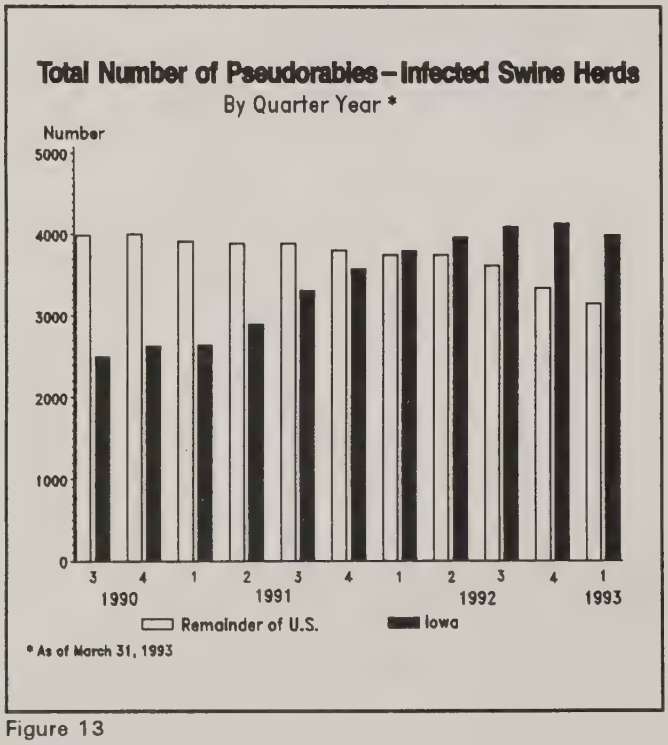

Figure 13

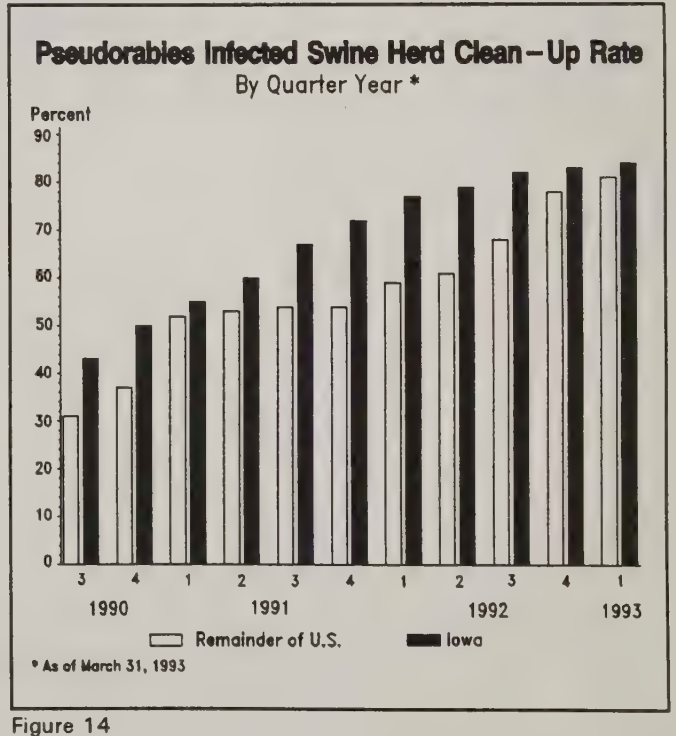

Figure 14

☐ Bovine Spongiform Encephalopathy

Sources: Dr. O. Denny, Northern Ireland
Dr. A. Doherty, Republic of Ireland
Dr. B. Hornlimann, Switzerland
Dr. J. Wilesmith, Great Britain

Since February 26, 1993, Great Britain has had 9,880 newly confirmed cases of bovine spongiform encephalopathy (BSE) with 1,744 more herds affected. About 45 percent (up from 42 on February 26) of the dairy herds and 9.5 percent (up from 8.1) of the beef suckler herds in Great Britain have been affected (Table 3). Dr. J. Wilesmith states that the reporting rate in Great Britain is decreasing.

In the last three months, 79 additional confirmed cases of BSE have been reported from Northern Ireland, while the Republic of Ireland and Switzerland have had four and seven cases respectively (Table 4).

A total of 955 U.S. bovine specimens were submitted for BSE examination between May 1990 and April 30, 1993. The Center for Disease Control examined 163, NVSL examined 384, and various veterinary diagnostic laboratories examined 408. To date, no evidence of BSE has been found in any U.S. cattle (Figure 15).

Bovine Spongiform Encephalopathy
Descriptive Epidemiological Statistics for Great Britain*
As of June 4, 1993

Total number of confirmed cases:	96,436
Total number of affected herds:	25,659
Proportion of dairy herds affected:	44.6%
Proportion of beef suckler herds affected:	9.5%

* England, Scotland, and Wales

Table 3

Other Countries Affected by BSE

Country	Imported Cases	Native Cattle	No. of Cases	Date of Last Report
Northern Ireland	Yes	Yes	834	3 June 93
Republic of Ireland	Yes	Yes	72	31 May 93
Switzerland	No	Yes	36	4 June 93
France	No	Yes	5	31 July 92
Oman	Yes	No	2	31 July 92
Falkland Islands	Yes	No	1	4 Sep 92
Denmark	Yes	No	1	10 Aug 92

Table 4

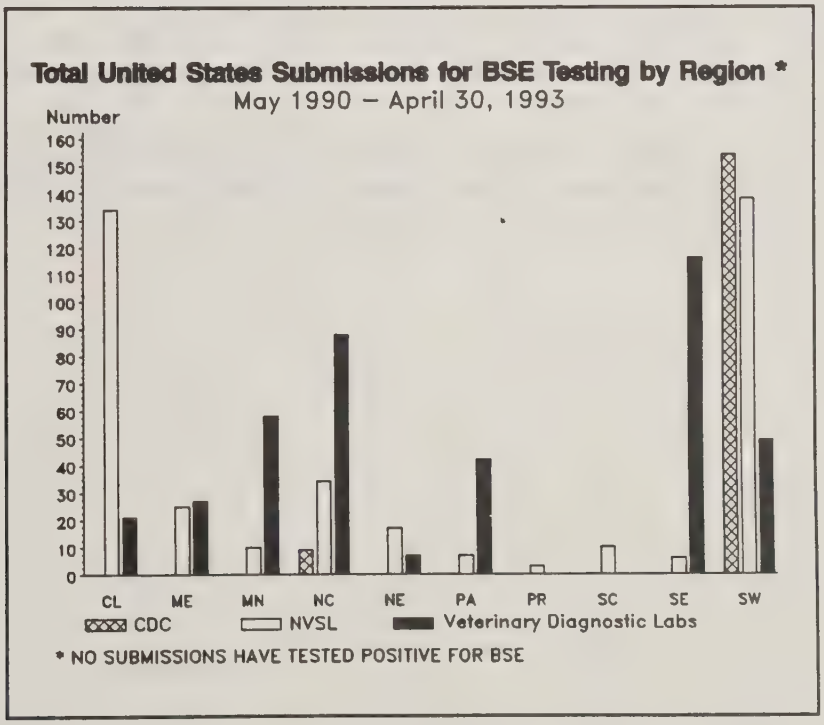

Figure 15

☐ Equine Viral Arteritis

Criteria: Virus neutralization (>1:4 titer) and no history of vaccination, or virus isolation (tissue or semen).

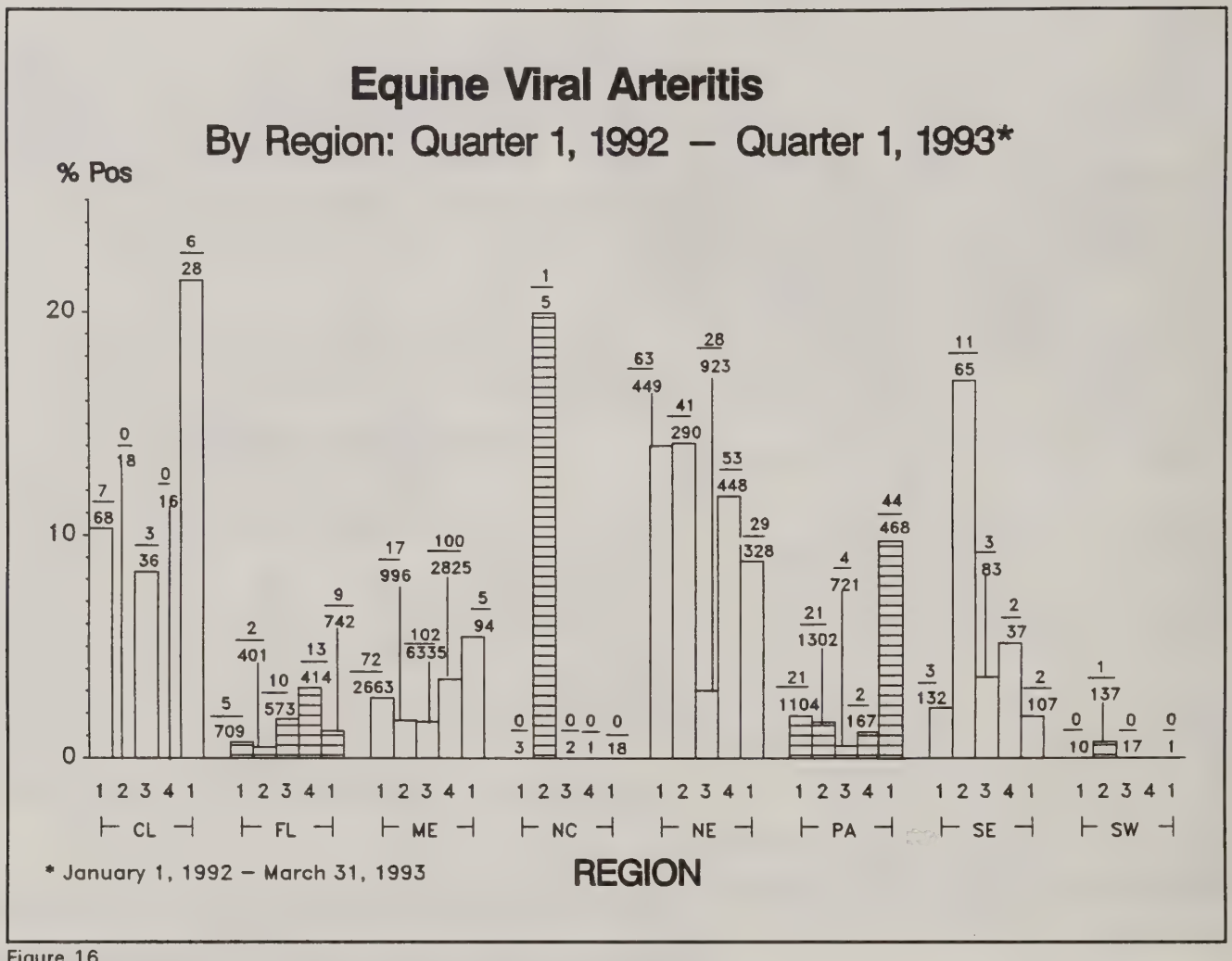

Figure 16

For all regions combined, 96 positive tests (5.3 percent of the 1,802 total tests) for equine viral arteritis were reported for the first quarter of 1993 (Figure 16). This is an increase in percent positive over the previous quarter (170 out of 3,908, 4.4 percent) and is also greater than the first quarter of 1992 (171 out of 5,146, 3.3 percent).

☐ Swine Brucellosis

Source: Dr. Delorias Lenard
USDA:APHIS:VS
Swine Health Staff
(301) 436-7767

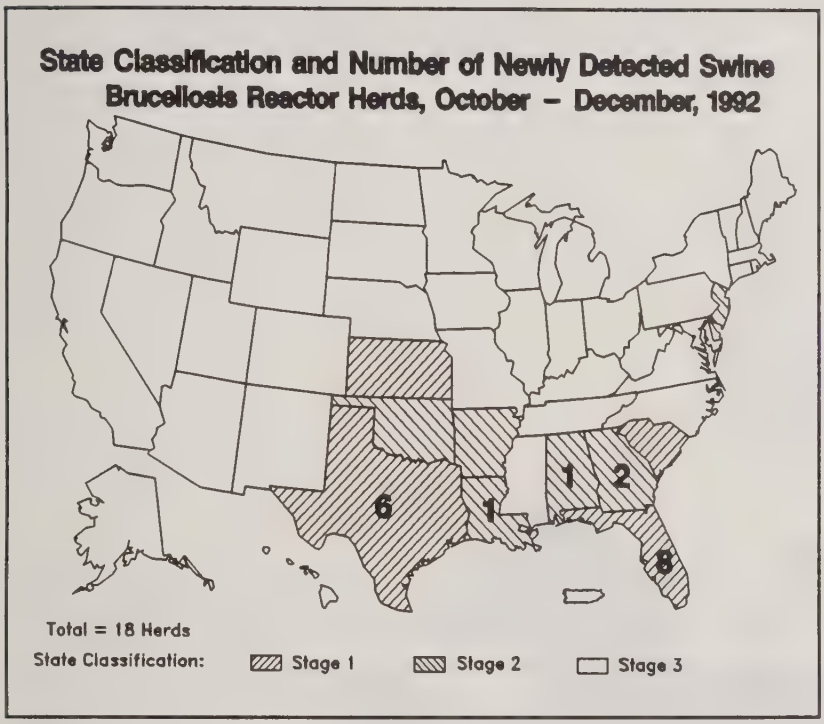

Figure 17

State Classifications:

Stage 1: Organization (surveillance and tracebacks begun).

Stage 2: ≥ 10 percent Surveillance/year; ≥ 80 percent of tracebacks successful.

Stage 3: Validated Free (≥ 5 percent Surveillance/year; ≥ 80 percent of tracebacks successful).

Missouri advanced to Stage 3 between October 1 and December 31, 1992. The 18 swine herds found infected with brucellosis during the fourth quarter of 1992 were eight fewer than during the third quarter of 1992 (Figure 17).

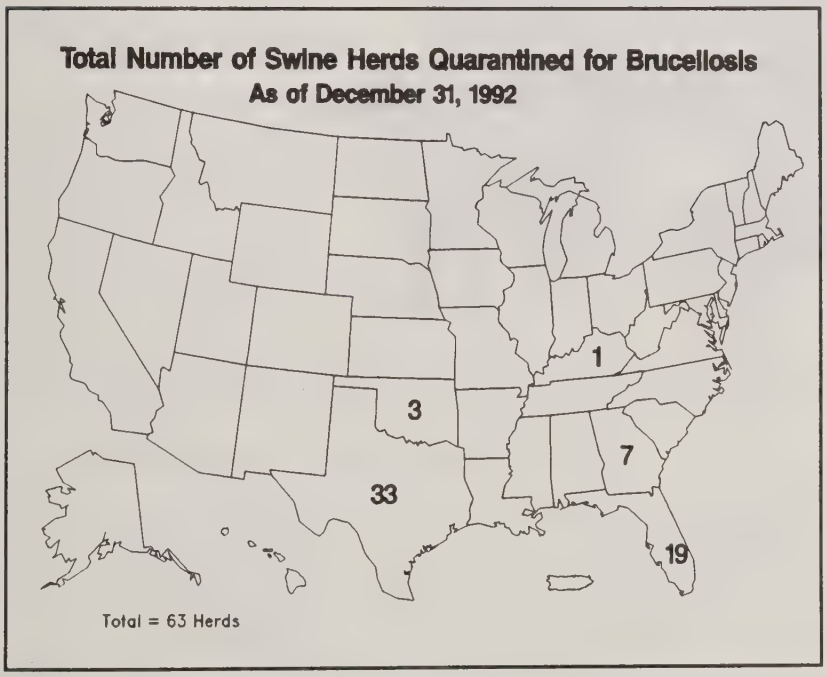

Figure 18

The number of newly detected herds decreased in Texas from the previous quarter from 26 to six, and the number of quarantined herds in Texas decreased from 36 to 33 (Figure 18).

II. Etiologic Agents Associated with Calf Diarrhea

Section II characterizes agents most commonly associated with diarrhea in calves (8 weeks of age or less) from accessions reported to veterinary diagnostic laboratories.

NOTE: Prior to Summer 1993, some laboratories reported total tests run and others reported accessions. Beginning Summer 1993, all laboratories report accessions. Differences seen in percent positive reported may reflect the change in reporting. Not all laboratories report on all diarrheal agents and some report for more than one State. Therefore, the accession denominators for each region may not agree from one agent to the next.

Key to Figures in this Section:

- In some cases, the denominator is a minimum because some laboratories were not able to determine the total number of negative tests performed.
- Data totals (percent positive) shown for "All Calves" include specimens of unknown bovine class and those from veal calves, in addition to specimens from beef or dairy calves. Thus, the sums of dairy calf totals and beef calf totals do not always equal the totals shown for all calves.
- Data are presented by region of specimen origin and quarter year of specimen submission. The numbers presented above each bar represent number positive over total accessions.
- Abbreviations for regions used in the figures are:

AK = Alaska	MN = Mountain	SC = South-Central
CL = Central	NC = North-Central	SE = Southeast
FL = Florida	NE = Northeast	SW = Southwest
HI = Hawaii	PA = Pacific	UNK = Unknown
ME = Mideast	PR = Puerto Rico & U.S. Virgin Islands	

☐ *Clostridium perfringens* Type C

Criteria: Gross and histopathologic exam.

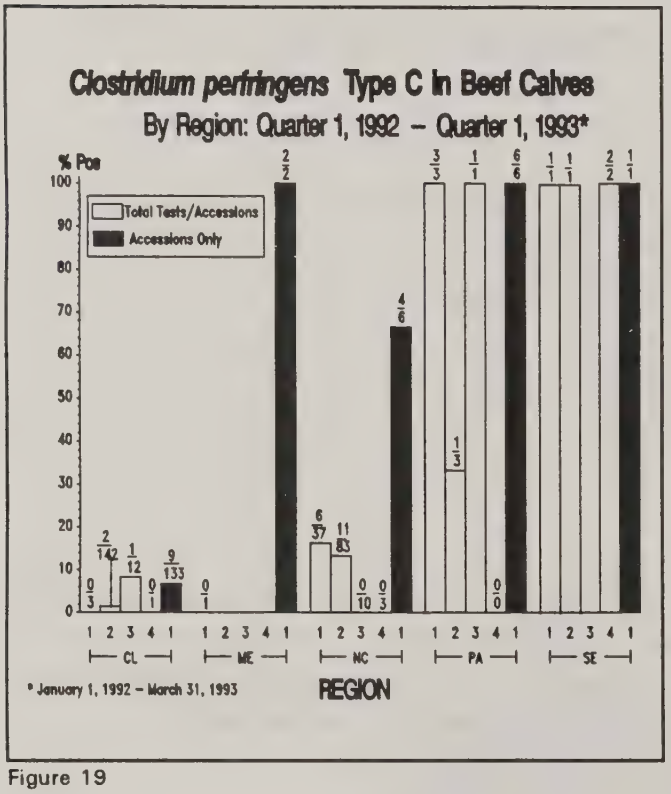

Figure 19

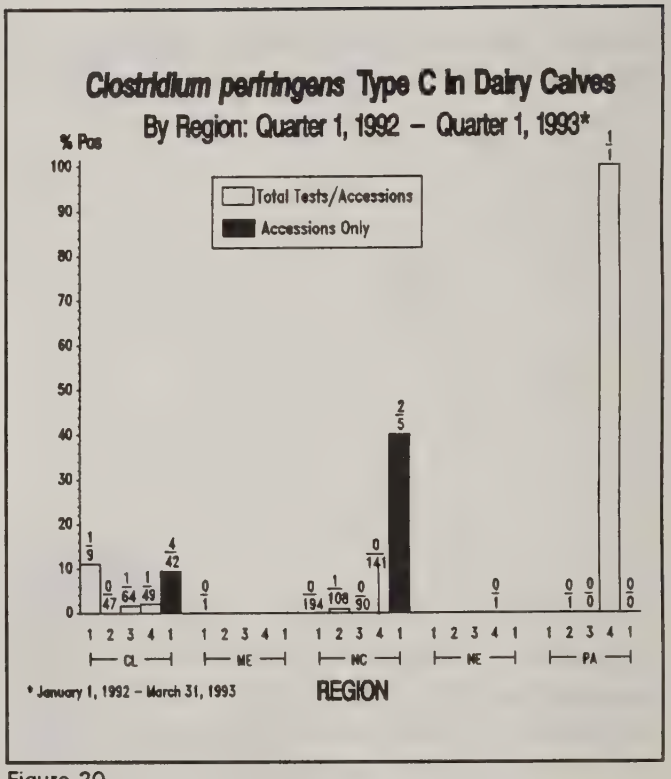

Figure 20

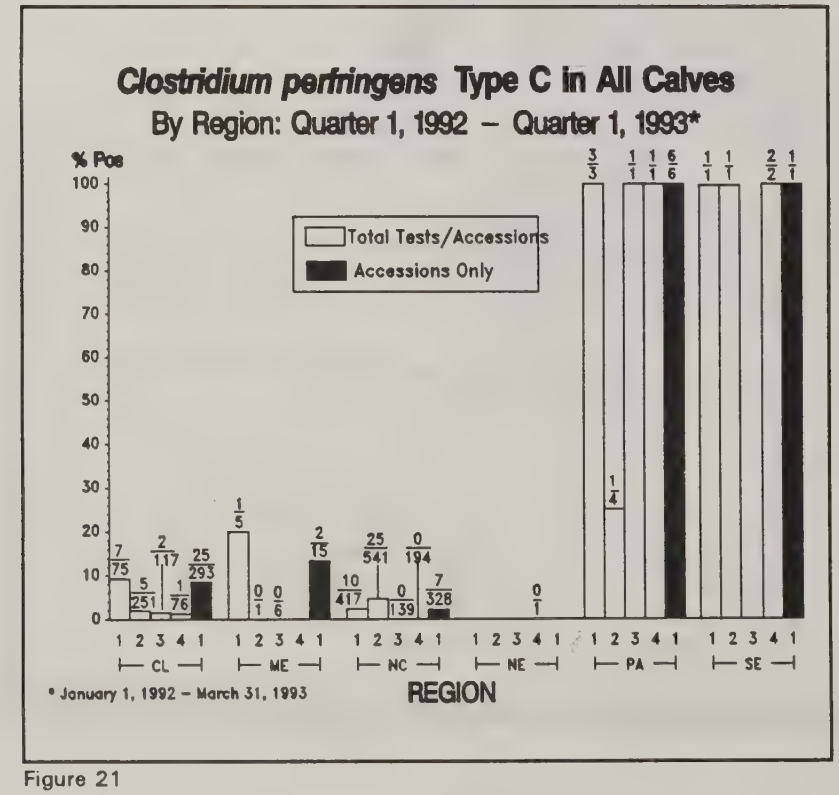

Figure 21

There were 22 out of 148 (14.9 percent) beef accessions (Figure 19) that tested positive for *Clostridium perfringens* type C compared to six out of 47 (12.8 percent) dairy accessions (Figure 20). During the first quarter of 1993, 643 tests were reported for all regions with 41 positive results (6.4 percent). The Central (CL) and the North-Central (NC) regions account for the majority of accessions but have among the lowest percents positive (Figure 21).

☐ *Escherichia coli*

Criteria: Culture from intestine and demonstration of at least one virulence characteristic such as: adhesive antigens, bacterial adherence, or enterotoxin.

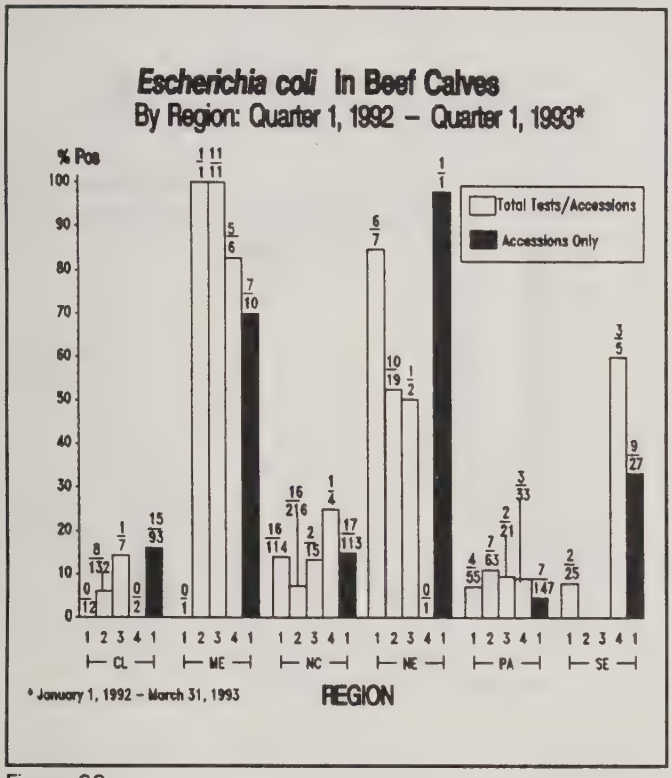

Figure 22

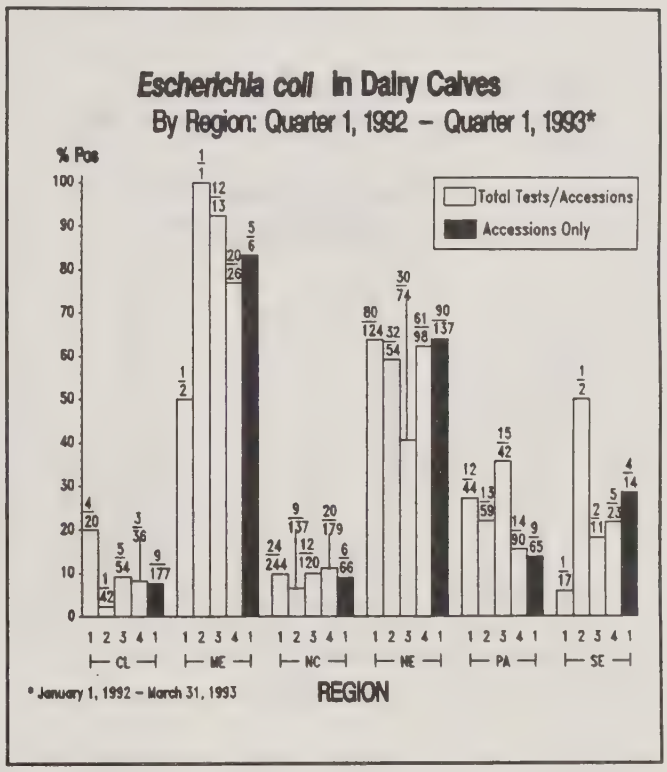

Figure 23

More positive accessions for *E. coli* were reported for dairy than for beef (Figures 22 and 23) for the first quarter of 1993. Of the 1,535 calf accessions tested, 374 (11 positive accessions from Florida do not appear on Figure 24) were positive (24.4 percent). For all calves (Figure 24), the North Central (NC) region had the most positive accessions (124/593, 20.9 percent). The Mountain (MN), Puerto Rico (PR), and Southwest (SW) regions all had zero positives out of seven, two, and one accessions respectively.

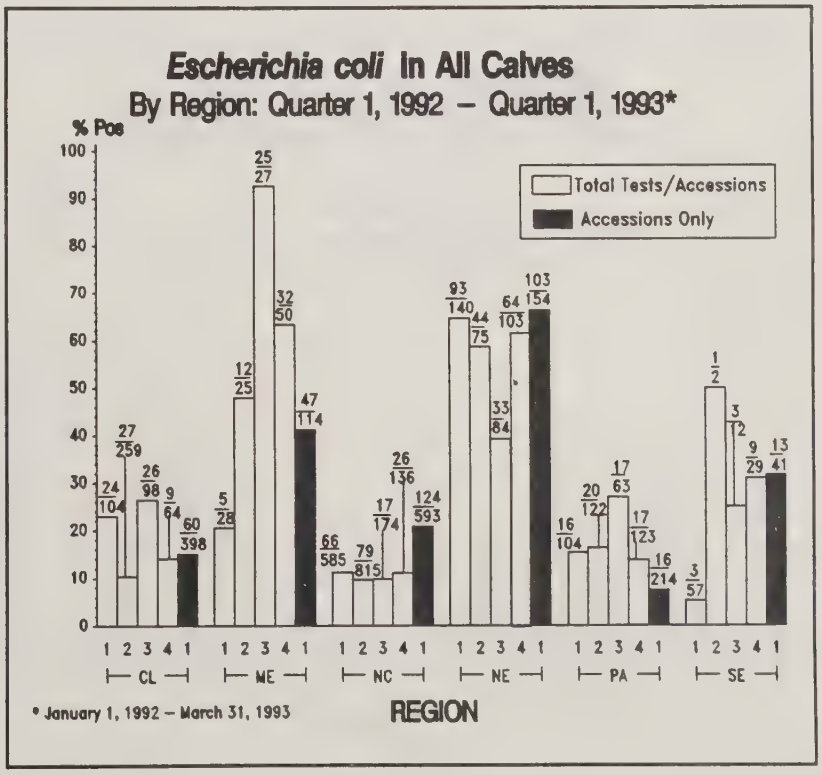

Figure 24

☐ *Salmonella* spp.

Criteria: Culture (serotype identification encouraged).

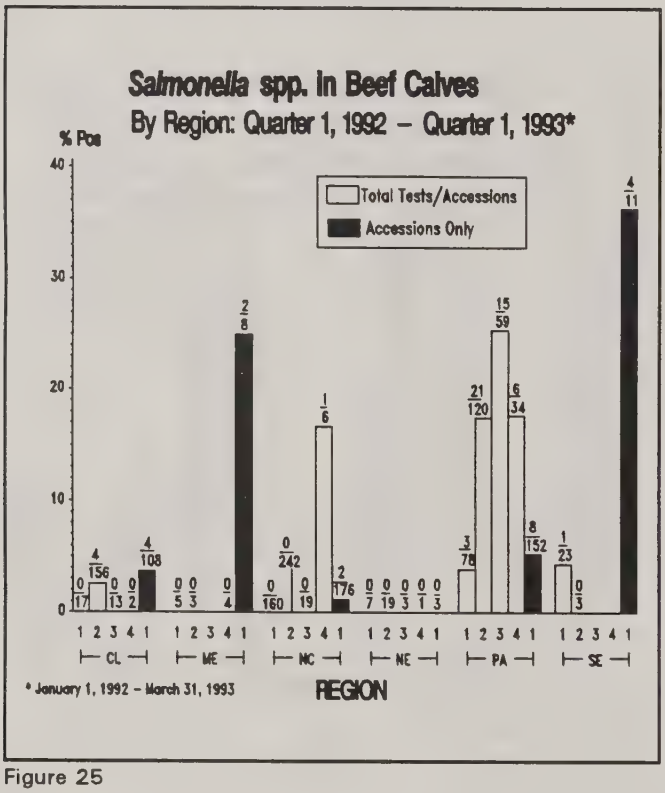

Figure 25

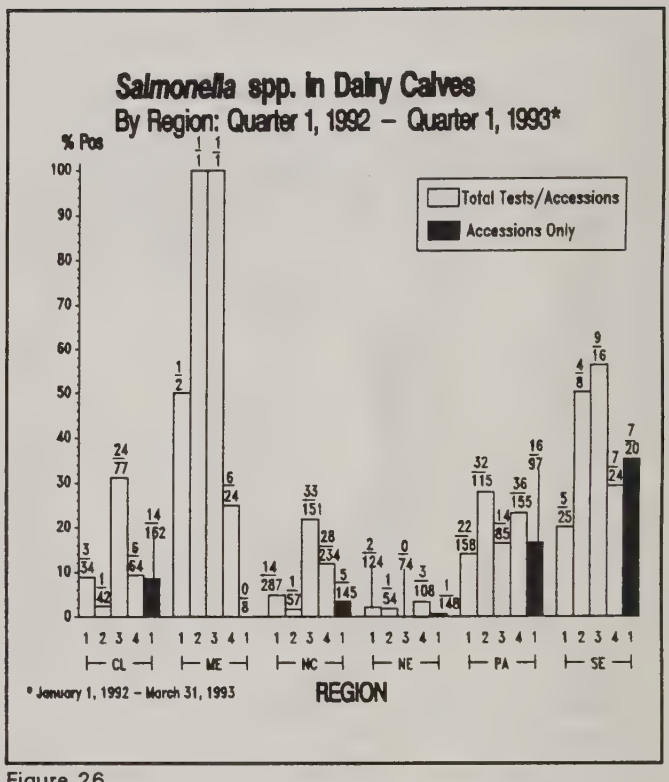

Figure 26

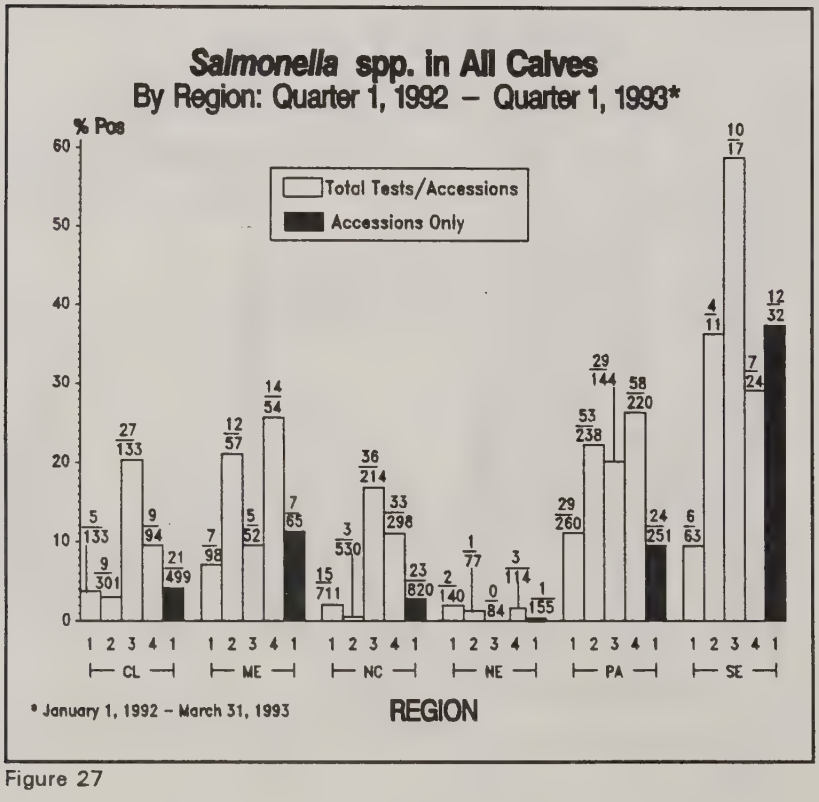

Figure 27

The Pacific (PA) region had the most positive dairy calf accessions for *Salmonella* spp. (16 out of 97, 16.5 percent) and also the most positive beef calf accessions (8 out of 152, 5.2 percent) (Figures 25 and 26). For all calves, 5.4 percent of accessions tested (100/1,856) were positive for *Salmonella* spp. during the first quarter of 1993. More accessions from the PA region were found positive for *Salmonella* spp. than for other regions of the U.S. (24/251, 9.6 percent) (Figure 27). The Mountain (MN) region had one out of 19 (5.3 percent) positive while Puerto Rico (PR) and Southwest (SW) regions had zero positive.

Salmonella serotypes reported in the first quarter of 1993 included one *infantis*, one *cero*, one *give*, one *montevideo*, one *schwarzengrund*, one *enteritidis*, two *newport*, six *dublin*, and nine *typhimurium*.

☐ Bovine Viral Diarrhea Virus

Criteria: Virus isolation, or, positive FA (any tissue) with histologic lesions.

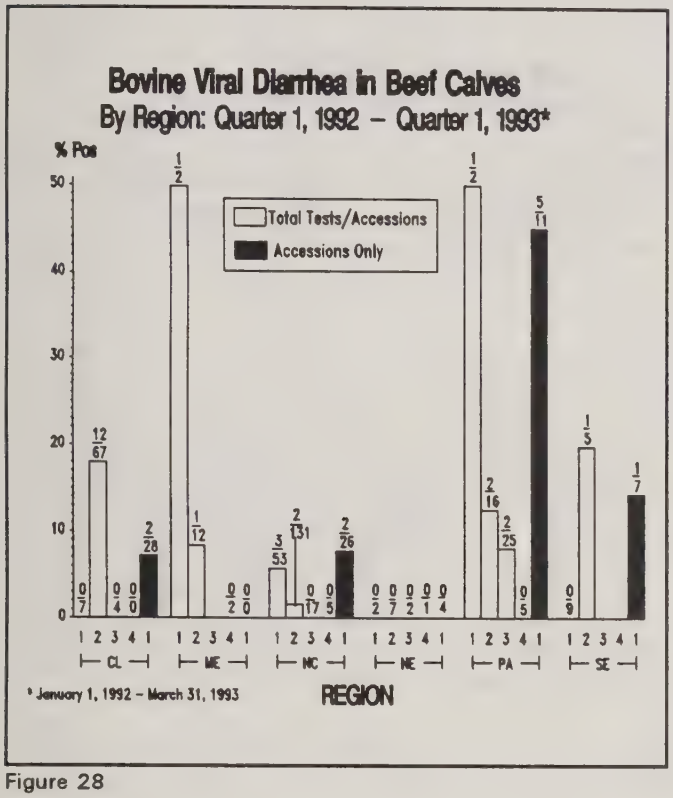

Figure 28

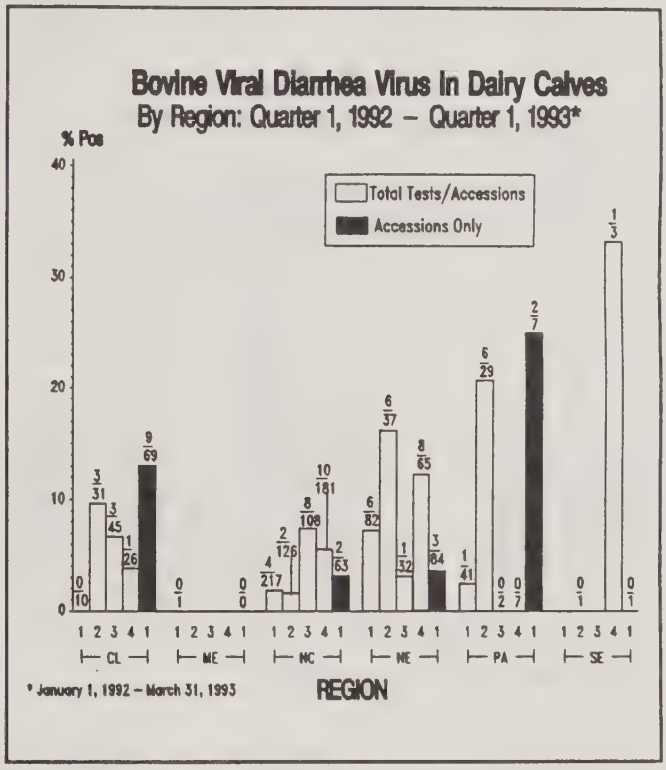

Figure 29

Ten out of 80 (12.5 percent) total beef accessions were reported positive for bovine viral diarrhea (BVD) virus compared to 24 out of 224 (10.7 percent) total dairy accessions (Figures 28 and 29). For the first quarter of 1993, 77 out of 879 (8.8 percent) total accessions were reported positive for BVD virus. For the third quarter in a row, none of the accessions from the Mideast (ME) region were positive for BVD virus (Figure 30).

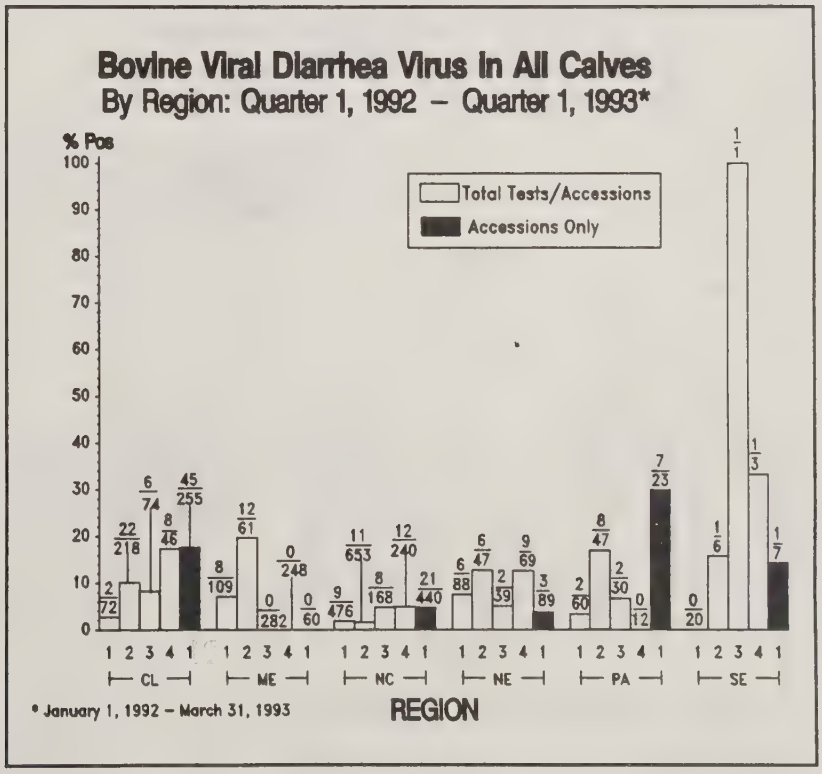

Figure 30

☐ Coronavirus

Criteria: Antigen by FA or ELISA, or, electron microscopy of feces/intestinal contents.

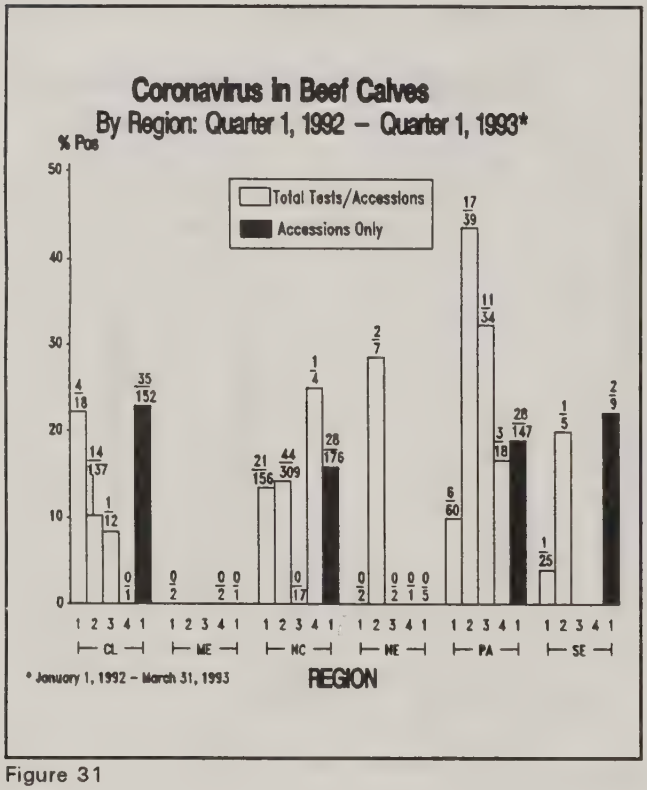

Figure 31

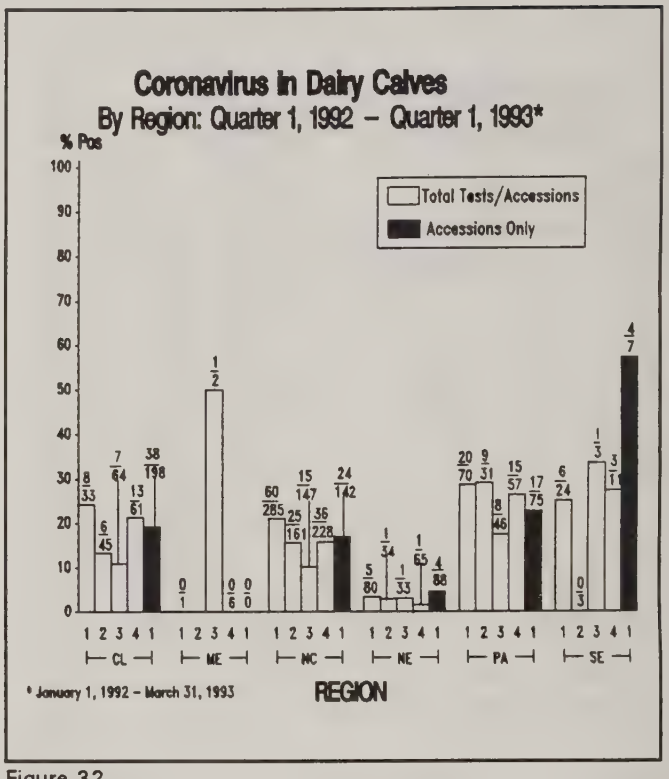

Figure 32

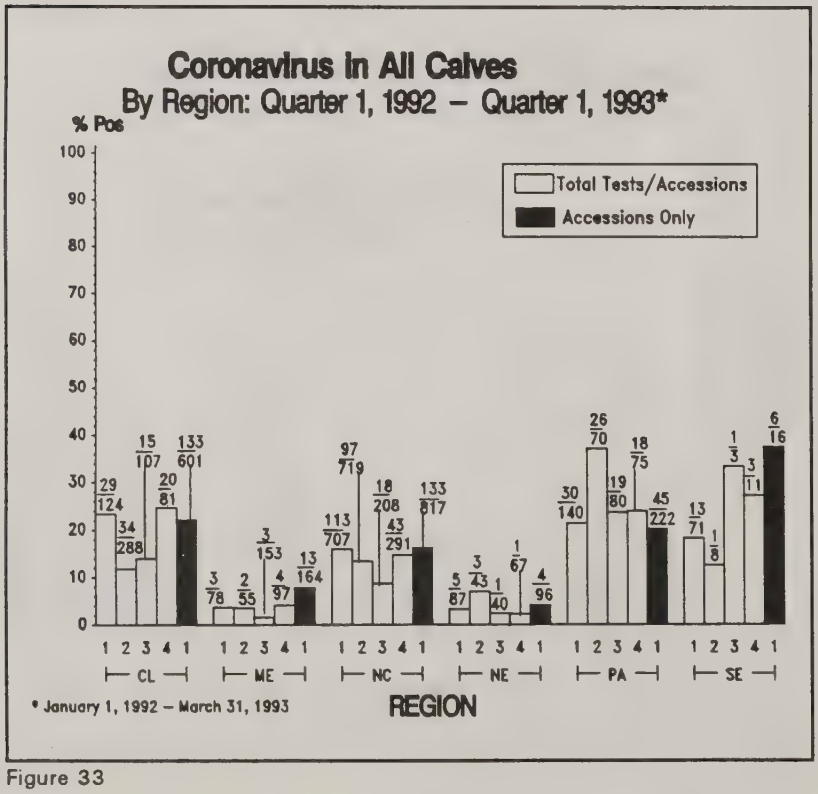

Figure 33

For beef calves (Figure 31), 94 out of 525 (17.9 percent) accessions were positive for coronavirus, and 94 out of 530 (17.7 percent) dairy accessions were positive (Figure 32). Overall, 343 out of 1,972 (17.4 percent) calf accessions tested positive in the first quarter of 1993 (Figure 33). Due to space limitations, Florida (FL), Mountain (MN), and Southwest (SW) regions do not appear on the graph. They all had positive accessions with 6/37, 2/18, and 1/1 respectively.

☐ Rotavirus

Criteria: Antigen by FA or ELISA, or, electron microscopy of feces/intestinal contents.

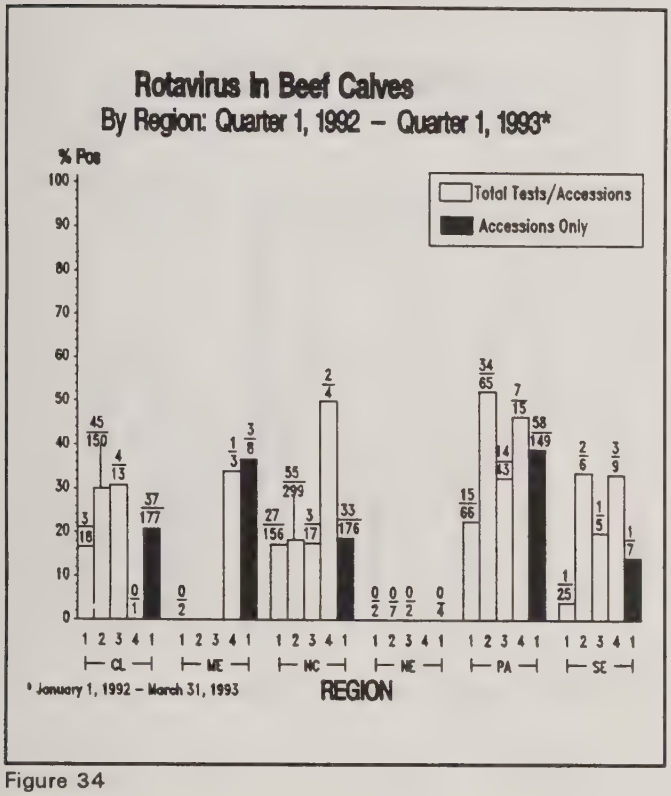

Figure 34

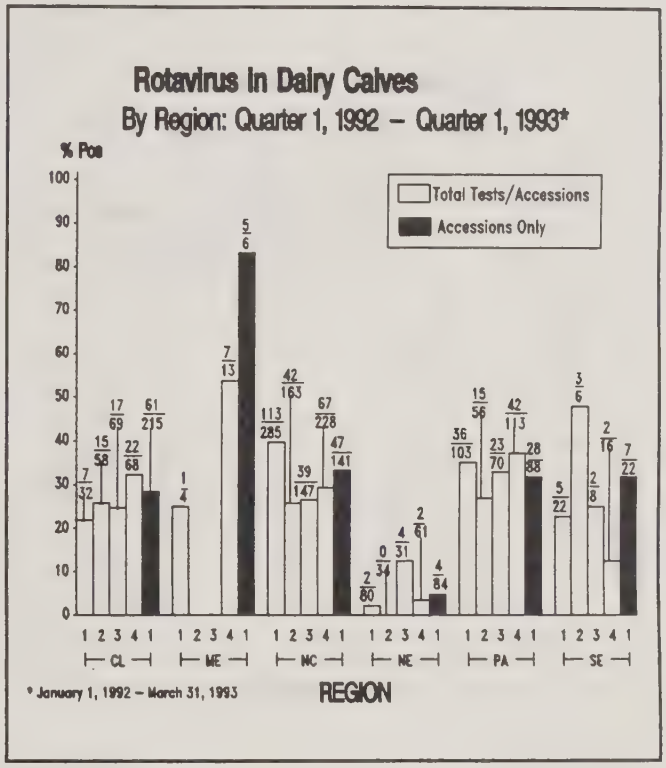

Figure 35

The percentages of positive accessions for Rotavirus were similar for dairy and beef calves (Figures 34 and 35) (24.5 and 25.8 percent respectively), but only 17.7 percent of unclassified calves tested positive. Overall, 461 out of 2,107 calf accessions tested positive for Rotavirus during the first quarter of 1993 (21.9 percent) (Figure 36).

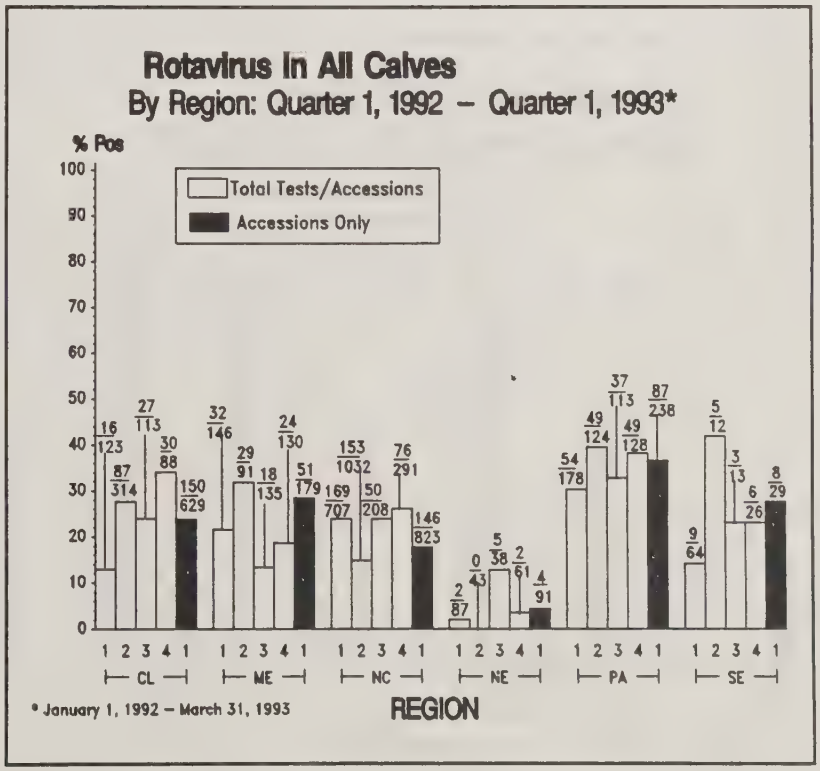

Figure 36

☐ Cryptosporidia

Criteria: Parasitologic or histopathologic exam.

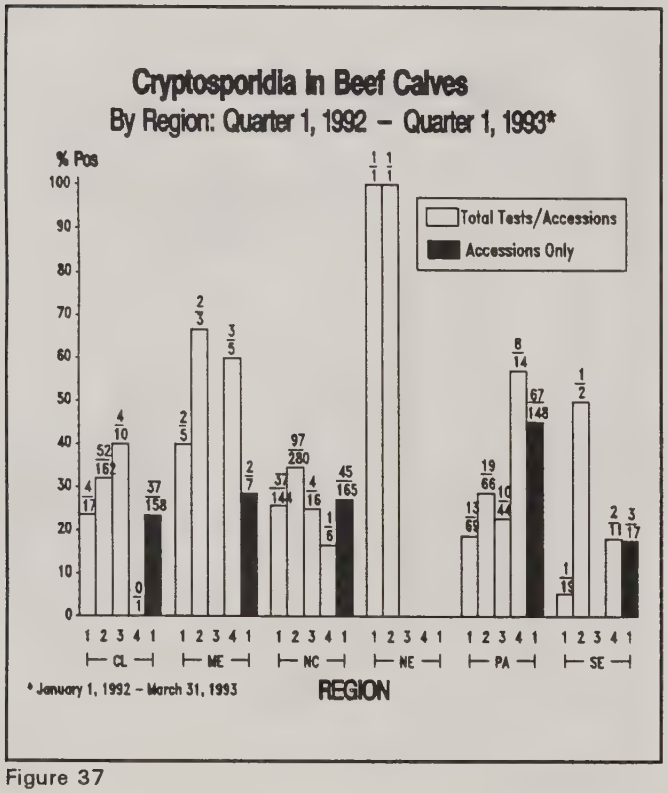

Figure 37

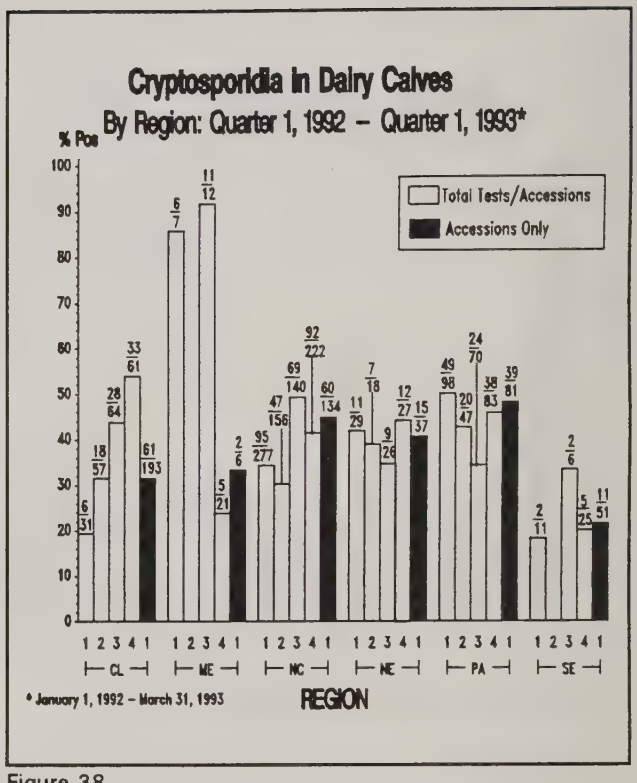

Figure 38

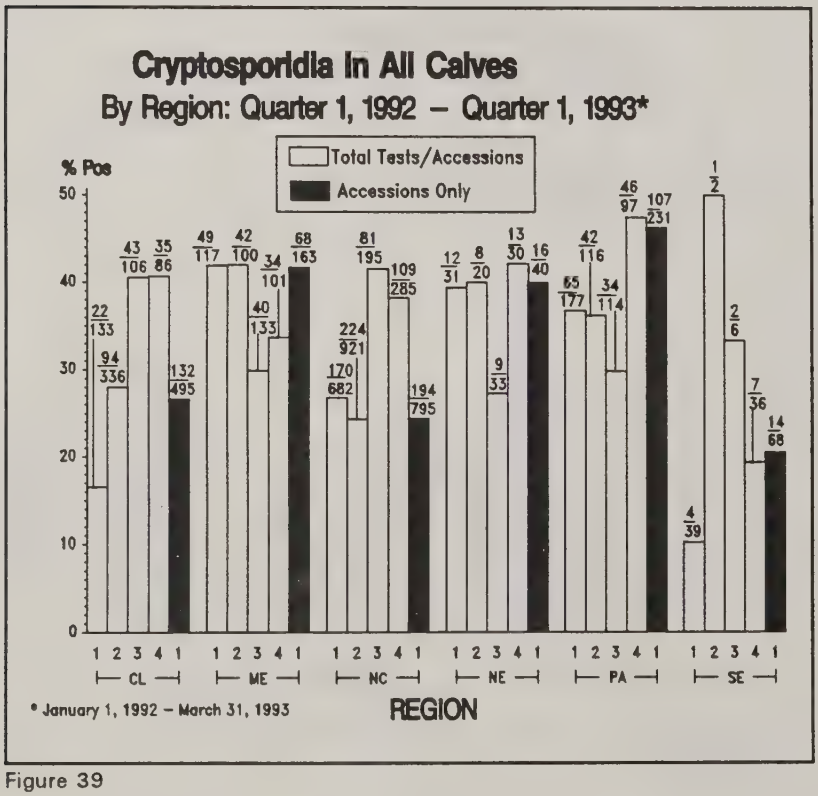

Figure 39

The overall percent of positive accessions for Cryptosporidia in beef (Figure 37), dairy (Figure 38), and unknown were 31.6, 37.7 and 23.7 respectively. All nine regions reporting for the first quarter of 1993 had at least one positive accession for Cryptosporidia. Overall, 543 out of 1,821 (29.8 percent) accessions were positive. The NC region accounted for 194 out of the 543 positive accessions (Figure 39).

☐ Coccidia

Criteria: Parasitologic or histopathologic exam.

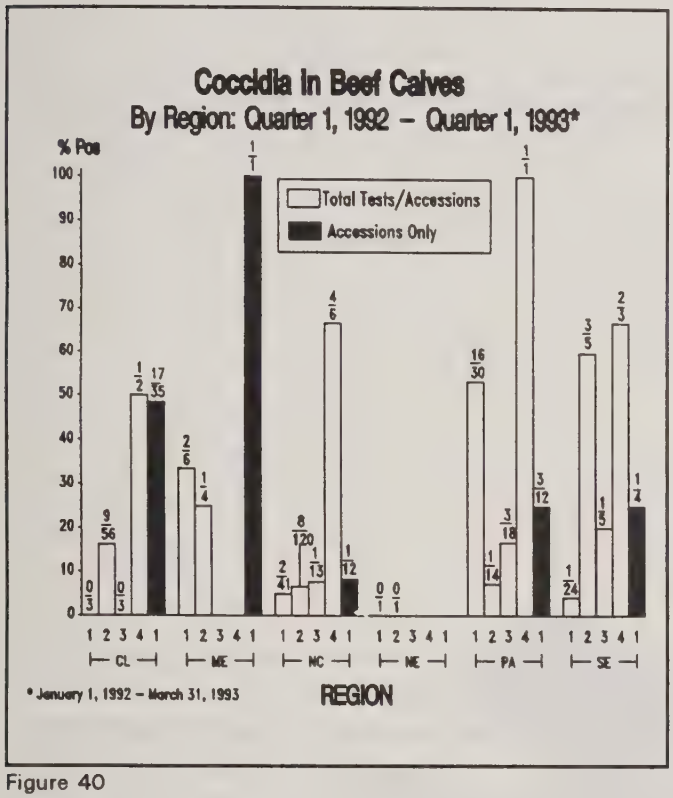

Figure 40

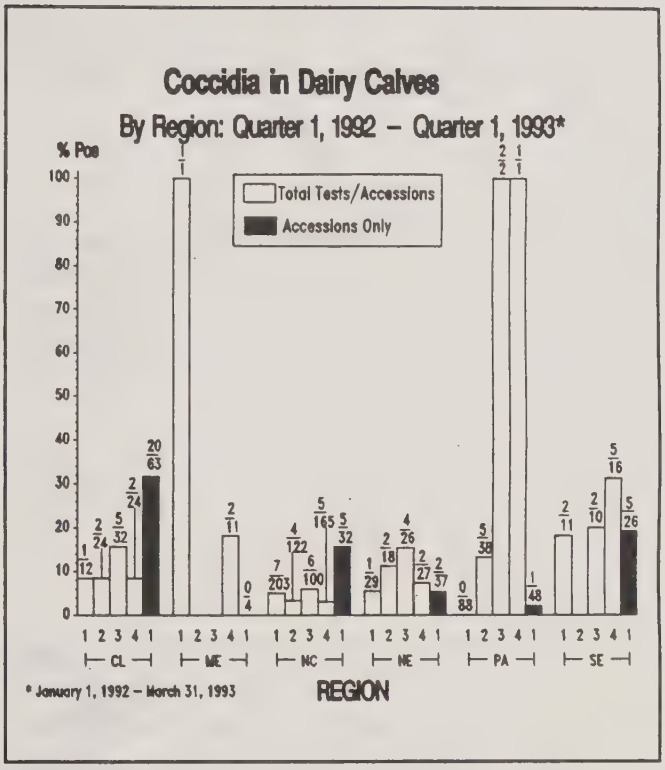

Figure 41

Twenty-three of the 65 beef samples (35.4 percent) tested positive (Figure 40) for coccidia, compared to 33 out of 210 (15.7 percent) of dairy calf accessions (Figure 41). Most of the accessions (648) were not classified as to beef or dairy and only 2.6 percent of these were positive for coccidia. Overall, there were 73 out of 912 (8 percent) positive accessions for coccidia reported from all calf accessions for the first quarter of 1993 (Figure 42).

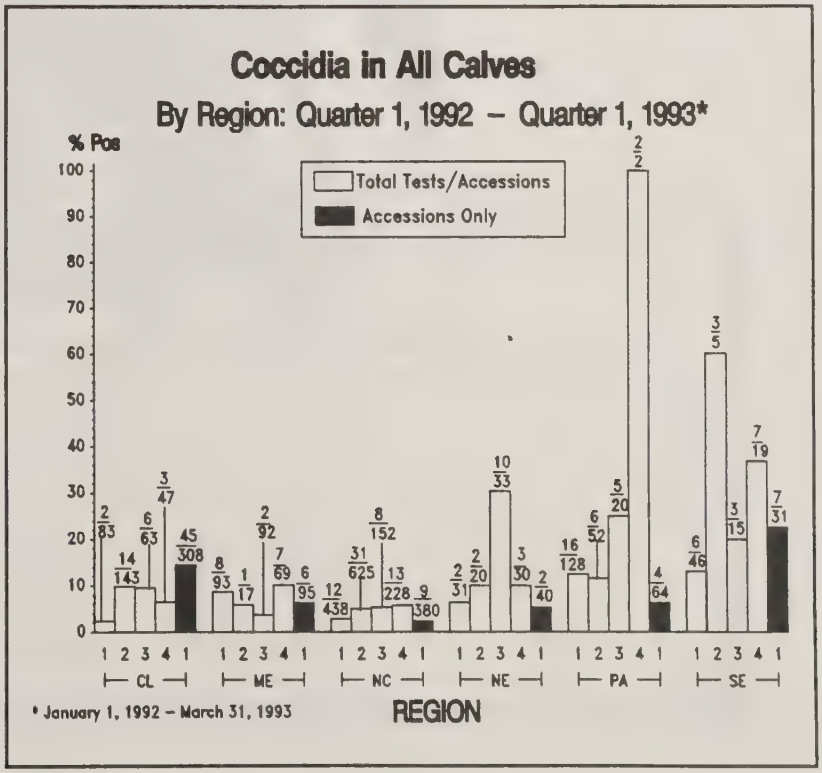

Figure 42

III. Etiologic Agents Associated with Piglet Diarrhea

Section III characterizes agents most commonly associated with diarrhea in piglets (8 weeks of age or less) from accessions reported to veterinary diagnostic laboratories.

NOTE: Prior to Summer 1993, some laboratories reported total tests run and others reported accessions. Beginning Summer 1993, all labortories report accessions. Differences seen in percent positive reported may reflect the change in reporting. Not all laboratories report on all diarrheal agents and some report for more than one State. Therefore, the accession denominators for each region may not agree from one agent to the next.

Key to Figures in this Section:

- In some cases, the denominator is a minimum because some laboratories were not able to determine the total number of negative tests performed.
- Data are presented by region of specimen origin and quarter year of specimen submission. The numbers presented above each bar represent number positive over total accessions.
- Abbreviations for regions used in the figures are:

AK = Alaska	MN = Mountain	SC = South-Central
CL = Central	NC = North-Central	SE = Southeast
FL = Florida	NE = Northeast	SW = Southwest
HI = Hawaii	PA = Pacific	UNK = Unknown
ME = Mideast	PR = Puerto Rico & U.S. Virgin Islands	

Criteria: Gross and histopathologic exam.

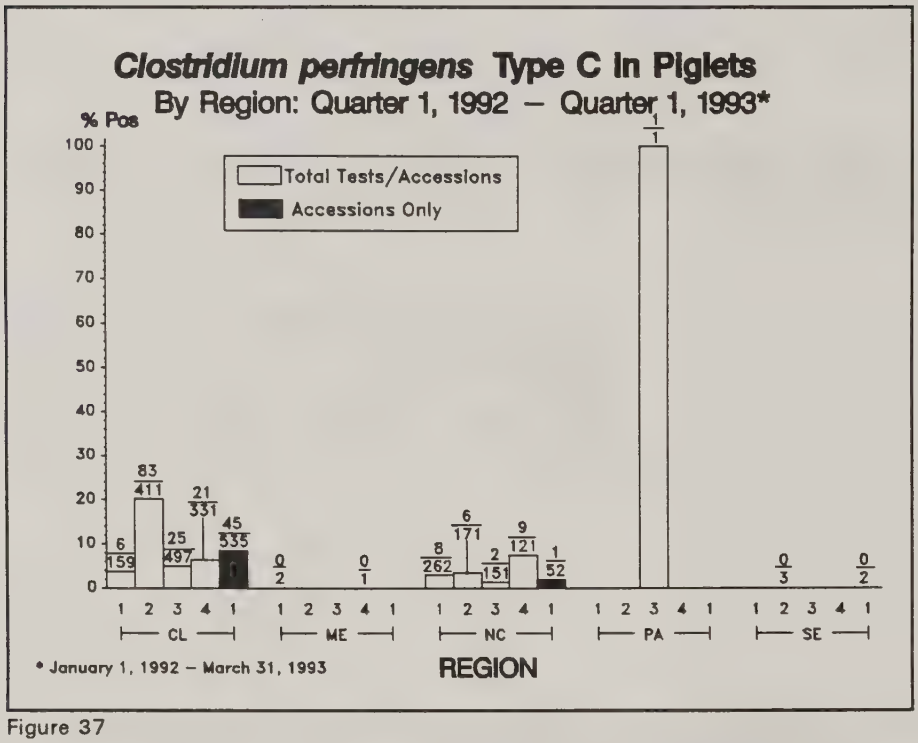

Figure 37

Most of the 46 out of 589 piglet accessions positive for *Clostridium perfringens* type C during the first quarter of 1993 were from the Central region (CL) (45/535, 8.4 percent). The North-Central (NC) was the only other region with a positive accession (1/52, 1.9 percent)(Figure 37).

☐ *Escherichia coli*

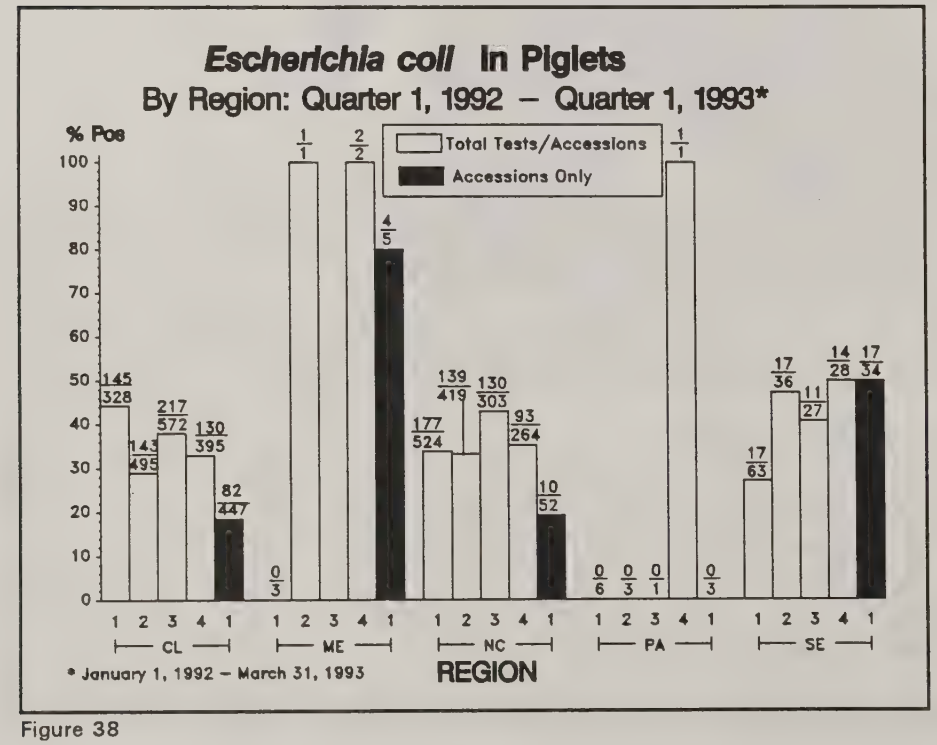

Figure 38

Criteria: Culture from intestine and demonstration of at least one virulence characteristic such as: adhesive antigens, bacterial adherence, or enterotoxin.

During the first quarter of 1993, 116 out of 544 (21.3 percent) accessions were positive for *Escherichia coli*. The Central region (CL) had the highest number of positive accessions (82) but the lowest percent positive (18.3). Puerto Rico (PR) (not shown) reported three positive out of three accessions (Figure 38).

☐ Rotavirus

Criteria: Antigen by FA or ELISA, or, electron microscopy of feces/intestinal contents.

For all regions combined, 110 out of 734 (15 percent) accessions were positive for Rotavirus during the first quarter of 1993. Specimens from the Central (CL) region accounted for 97 of the 110 total positive accessions (Figure 39).

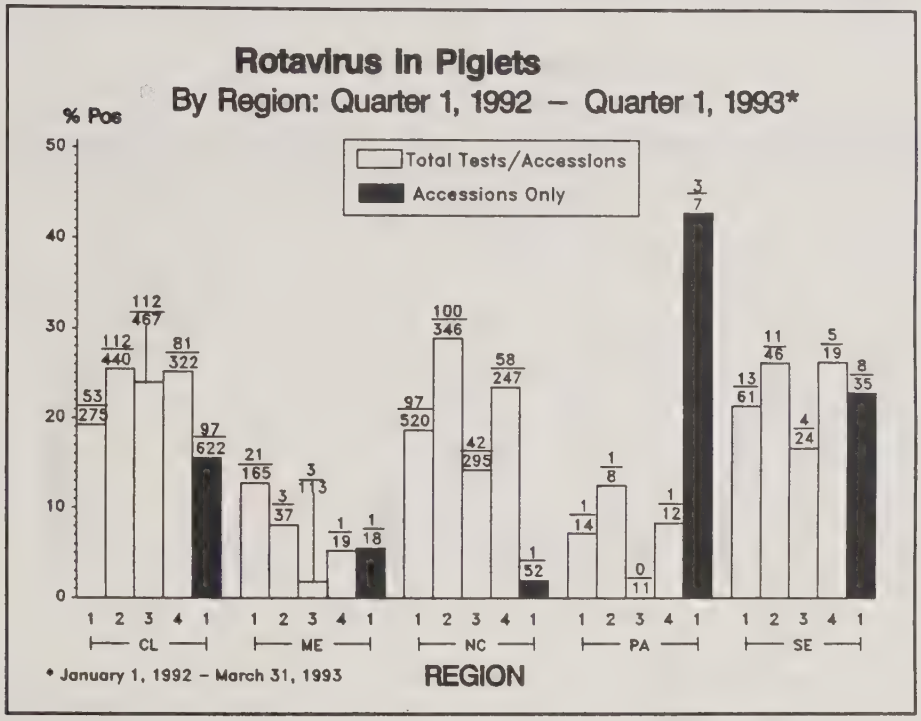

Figure 39

☐ Transmissible Gastroenteritis Virus (TGE)

Criteria: Antigen by FA, or, electron microscopy.

A total of 159 out of 762 (20.9 percent) accessions were positive for TGE during the first quarter of 1993. The Central region (CL) accounted for 141 of the 159 positive accessions (Figure 40).

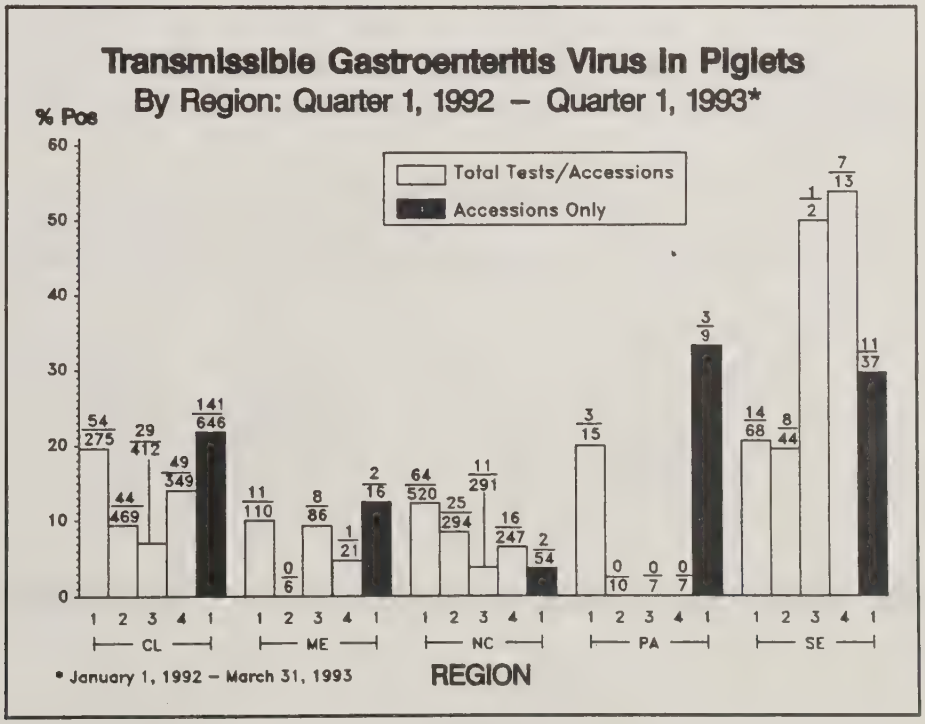

Figure 40

☐ Coccidia

Criteria: Parasitologic or histopathologic exam.

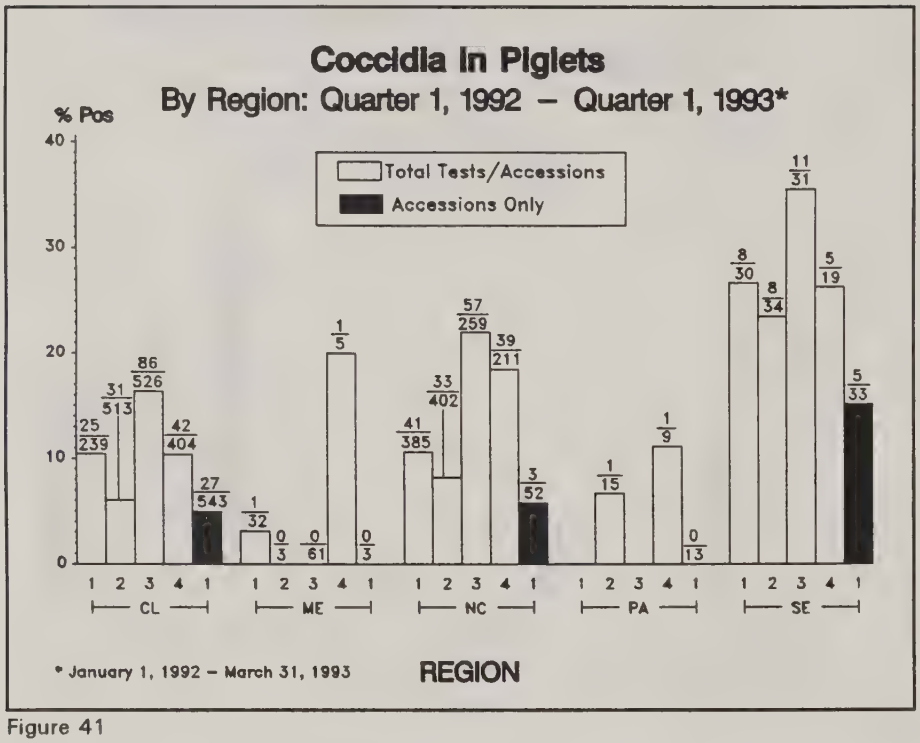

Figure 41

For all regions combined, there were 35 positive accessions out of 647 (5.4 percent) for coccidia in the first quarter of 1993 (Figure 41). Puerto Rico (PR) (not shown) reported zero (out of three) positive accessions.

IV. Etiologic Agents Associated with Bovine Abortion

Section IV characterizes agents most commonly associated with bovine abortions (aborted fetuses or congenitally infected calves) from accessions reported to veterinary diagnostic laboratories.

Key to Figures in this Section:

- In some cases, the denominator is a minimum because some laboratories were not able to determine the total number of negative tests performed.
- Data totals (percent positive) shown for "All Cattle" include specimens of unknown bovine class, in addition to specimens from beef or dairy. Thus, the sum of dairy and beef do not always equal the totals shown for all cattle.
- Data are presented by region or State of specimen origin and quarter year of specimen submission.
- Results reported with dates not corresponding to the current quarter are the result of increased testing times or related to reporting times.
- Abbreviations for regions used in the figures are:

AK = Alaska	MN = Mountain	SC = South-Central
CL = Central	NC = North-Central	SE = Southeast
FL= Florida	NE = Northeast	SW = Southwest
HI = Hawaii	PA = Pacific	UNK = Unknown
ME = Mideast	PR = Puerto Rico & U.S. Virgin Islands	

☐ *Neospora* spp.

Criteria: Histopathology and detection of antigen by immunohistochemistry, or detection of antibody in aborted fetus by indirect FA.

Neospora spp. in Beef Cattle

Region	Quarter	Positive	Total
North-Central	4-92	0	4
Pacific	1-93	1	***

Table 5

Neospora spp. in Dairy Cattle

Region	Quarter	Positive	Total
Central	4-92	0	2
North-Central	4-92	7	112
Pacific	1-93	17	***

Table 6

Neospora spp. in All Cattle

Region	Quarter	Positive	Total
Central	4-92	0	2
North-Central	4-92	7	129
Central	1-93	0	***
Pacific	1-93	21	***

Table 7

Three laboratories submitted data on *Neospora* spp. for the fourth quarter of 1992 through the first quarter of 1993. One beef and 24 dairy cattle accessions tested positive (Tables 5 and 6). A total of 28 were positive for *Neospora* spp. (Table 7). The total number of accessions tested was not available in all cases.

DxNEWS

This section contains news items and articles of potential interest to diagnostic laboratories. Submissions from nonparticipating laboratories are welcome.

New Section Added in DxMONITOR

The DxMONITOR has added a new section which will report diagnostic findings associated with bovine abortions. The first agent reported will be *Neospora* spp. and *Neospora*-like parasitism. Other agents will be added to the section with time.

Neospora spp. and *Neospora*-like parasitism has become an increasingly common finding in the investigation of bovine abortions. In California, at least ten percent of all confirmed dairy cow pregnancies end in abortion and approximately 18 percent of these are believed to be protozoan related. Of these, approximately 20 percent have been further identified as *Neospora* spp. Overall, 3.6 percent of bovine abortions in California are believed to be associated with *Neospora* spp. parasitism. The true prevalence of *Neospora* infection in U.S. cattle is unknown. New Mexico reports never having identified *Neospora* in a beef fetus while they identify it in about 20 percent of dairy fetuses.

Neospora caninum was first recognized as a dog parasite in 1984. Since that time, *Neospora* spp. have also been identified in naturally acquired infections of cattle, sheep, goats, and horses suffering from neurologic and reproductive disorders. *N. caninum* is a protozoan which closely resembles *Toxoplasma gondii* structurally and the clinical findings associated with Neosporosis are similar to those found in Toxoplasmosis.

Aborted calf fetuses are usually autolyzed and most are between 5-6 months of gestation. Cows generally do not develop metritis or retained placenta and often continue to milk. Infected cows do not show signs of disease but may carry a latent infection. It is not known if an infected animal develops immunity to the organism or if repeat infection is possible.

The life cycle and mode of transmission of *Neospora* spp. are currently unknown. The organism appears to be a coccidian. Tachyzoites and tissue cysts containing bradyzoites are the only life cycle stages which have been identified. Because of its similarity to *T. gondii*, it is hypothesized that the definitive host is a carnivore and that oocysts are transmitted by fecal contamination of feed and water. Neither oocysts nor a definitive host have been identified. Livestock species are probably infected by consuming the oocysts from contaminated feed or water and carnivores are probably infected by ingesting tachyzoites and tissue cysts in infected meat. It is known that *N. caninum* can be transmitted transplacentally in the dog and is believed to be transmitted transplacentally in other species as well.

The difficulties in diagnosis of *Neospora* spp. are related to: 1) its structural similarity to T. gondii, 2) fetuses are often unsuitable for examination and contain few organisms, 3) the existence of only experimental serologic tests for *N. caninum* antibody in cattle, 4) tissue cysts are found only in the brain and spinal column of the infected animal, and 5) live parasites have not been recovered from aborted bovine material. Most veterinary diagnostic laboratories recommend submitting the aborted fetus for *Neospora* spp. diagnosis regardless of its condition because although the brain may be macerated, the brain stem is usually in good enough condition to allow examination.

Equine Infectious Anemia Testing Required in Four Illinois Counties

Equine owners in parts of Johnson, Union, Jackson, and Williamson counties in Illinois must test their animals for equine infectious anemia (EIA). The Illinois Department of Agriculture has worked since March 1993 with equine owners to ensure all horses and other equine animals are tested for the disease. The department suggests testing animals annually and promptly isolating those affected.

National Animal Health Monitoring System (NAHMS) Releases Results of the National Dairy Heifer Evaluation Project

Preliminary analyses of the 1992 National Dairy Heifer Evaluation Project (NDHEP) are complete and available on request. The *Dairy Herd Management Practices Focusing on Preweaned Heifers* is a tabular summary of National population estimates based on data collected during the study, including standard errors. NDHEP data are also available in a series of

fact sheets containing discussions and graphic presentations of various aspects of the project.

The NDHEP was a cooperative effort of the USDA:APHIS:Veterinary Services, the National Agricultural Statistics Service, State and Federal Veterinary Medical Officers, universities, and 1,811 dairy producers from 28 States. The American Association of Bovine Practitioners (AABP) and USDA:Cooperative Extension Service provided assistance in producing the report and fact sheets.

If you would like to receive copies of the National Dairy Heifer Evaluation Project results, please contact the address or telephone number below.

National Animal Health Monitoring System
USDA:APHIS:VS
555 South Howes, Suite 200
Fort Collins, Colorado 80521
(303) 490-7800

Update on Foreign Animal Diseases

Foot-and-Mouth Disease. An initial outbreak was identified in February 1993 in the Potenza province of Italy. Both bovine and porcine species were involved and control measures were put into effect. By March 22, 1993, there were 40 suspected or confirmed outbreaks in surrounding areas. Most of the secondary outbreaks are believed to be related to the initial outbreak. Bovine, porcine, ovine and caprine species, and buffalo have been affected.

Argentina has experienced outbreaks in several provinces because of a lack of vaccine. Control measures have been instituted.

African Horse Sickness. Spanish officials report that no outbreaks have been recorded since October 1990, thanks to the rigorous application of measures of census, identification, movement control, slaughter of infected animals, and disinfection of premises. Vaccination of all animals halted in July 1991 with a view to obtaining "free" status in October 1992. A territory is considered free 12 months after suspension of vaccination and 24 months after the last outbreak.

Portugal was declared free from African horse sickness by a decision of the Council of the European Communities dated October 7, 1992.

Hog Cholera. The Netherlands is free from hog cholera. The last outbreak was confirmed on June 17, 1992. No new outbreaks have occurred since that date. The Netherlands applies a stamping-out policy and vaccination is not allowed.

As Slovinia has been free from hog cholera since December 27, 1992, all sanitary measures taken in order to control this disease have been suspended.

Swine Vesicular Disease. The last outbreak of swine vesicular disease in the Netherlands was confirmed on October 28, 1992. No new outbreaks have occurred since that date. The Netherlands applies a stamping-out policy.

Spanish officials report one outbreak confirmed February 10, 1993. Control measures include quarantine, movement controls, and slaughter of affected animals.

African Swine Fever. Veterinary officials in Zambia say thousands of pigs in the country are being shot, burned, and buried in an urgent bid to stop the spread of African Swine Fever.

Bovine Tuberculosis. After a 22-year national eradication program for bovine brucellosis and tuberculosis, Australia has declared "impending freedom" from bovine tuberculosis, as of December 31, 1992. This means that there are no known infected herds and all herds have been assessed. The whole of Australia was declared free from bovine brucellosis in July 1989. A national monitoring program for the two diseases is continuing.

Viral Hemorrhagic Disease of Rabbits. As of January 14, 1993, Mexico has been declared free from viral hemorrhagic disease of rabbits. All restrictive measures relating to the transport and marketing of rabbits concerning this disease have been lifted, and in the future, the disease is to be considered as exotic in Mexico. According to available information, Mexico is the first country in the world to have eradicated this disease from its territory.

Fowl Plague. Australia could be considered free from fowl plague as of February 1, 1993. No cases have been detected since July 31, 1992.

[USDA:APHIS:IS Animal Health Update Feb/March, April 1993]

Virginia Animal Health Monitoring System

The Virginia Department of Agriculture and Consumer Services, Division of Animal Health has their own Virginia Animal Health Monitoring System (VAHMS). The State Veterinarian's office collects information on specified diseases within the State from veterinary practitioners, university and private veterinary diagnostic laboratories within the State, and the Virginia Department of Health. Disease reporting by veterinarians is required to maintain accreditation. The office also collects data for the Veterinary Diagnostic Laboratory Reporting System (VDLRS), and data are shared between the two systems. The information is compiled and presented in the monthly VAHMS Newsletter. This system is a good example of the use of the information available from practitioners and diagnostic laboratories to monitor animal health and helps to ensure the quality of information provided to the VDLRS by the State of Virginia.

Contributed by: Dr. Leslie Black, VAHMS, Division of Animal Health, (804) 786-2483, and Dr. Bruce Akey, Bureau of Laboratory Services, (804) 786-9202, Virginia Department of Agriculture and Consumer Services, Richmond, VA 23219.

Lab Notes and DxNEWS Article Submissions are Encouraged

Readers of the DxMONITOR Animal Health Report are encouraged to submit items suitable for "Lab Notes" and the "DxNEWS." All articles should be typed double spaced. Photos/artwork should be camera ready copy. If possible, please provide your article on diskette and indicate what type of software was used to create/store the file (i.e., WordPerfect, Word Star). Send submissions to the address on the inside front cover of this issue.

Free Data Submission Software Available

The DxMONITOR Data Submission System (DDSS) is available free of charge to any laboratory interested in participating in the Veterinary Diagnostic Laboratory Reporting System (VDLRS).

To use the DDSS, data must first be captured by a laboratory in whatever manner works best for that particular laboratory. The summary totals of those data are then entered into a data entry screen which is provided as part of the DDSS. A computer file is automatically created for use in transferring the data. A reference guide leads the user through this process.

Because the system was written within a software package called "Epi Info," a copy of this program and a user's guide are also included. Epi Info was developed by the Centers for Disease Control and the World Health Organization. It has many capabilities including data analysis, word processing, statistics, etc. Please contact the address on the inside front cover of this issue for more information about the DDSS.

DDSS Update Complete

In May 1993, an updated version of the DxMONITOR Data Submission System software was completed and copies sent to participating labs and other interested parties. If you did not receive your copy, or would like more information about the update, please contact the address on the inside front cover of this issue.

Materials available from the VDLRS are listed below. Send this clip-out order form to:

Veterinary Diagnostic Laboratory
Reporting System
USDA:APHIS:VS
555 South Howes, Suite 200
Fort Collins, CO 80521-2586

Quantity

_____ **DxMONITOR Animal Health Report*** *(Quarterly report of VDLRS data)*

_____ **Introduction to the VDLRS** *(An informational brochure)*

_____ **Report of the 1991 DxMONITOR Committee Meeting** (August 1991)

_____ **Report of the 1990 VDLRS Planning Committee Meeting** (June 1990)

* The most recent issue of the DxMONITOR will be sent. If you want past issues, please call (303) 490-7800.

Name:_____

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Appendix

This section provides tables displaying the most recently reported diagnostic laboratory data.

Selected Diseases:

Appendix Calendar

Spring Issue -	*Selected Diseases*
Summer Issue -	*Calf Diarrhea Agents*
Fall Issue -	*Piglet Diarrhea Agents*
Winter Issue -	*Bovine Abortion Agents*

Note: Prior to Summer 1993, some laboratories reported total tests run and others reported accessions. Beginning Summer 1993, all laboratories report accessions. Differences seen in percent positive reported may reflect the change in reporting.

Key to Tables in this Section:

- Data are presented by laboratory of specimen origin and quarter of specimen submission.
- Values represent the number of positive tests (P) and the number of tests performed (T).
- Values reported in the "ALL" category represent all tests performed during the quarter This category may include some tests for which a month of specimen submission was not known. Therefore, the sum of the quarterly values may not be equal to the "ALL" values.
- Data totals (positives and total tests) shown for "All Calves" include specimens of unknown bovine class and those from veal calves, in addition to specimens from beef or dairy calves. Thus, the sums of dairy calf totals and beef calf totals do not always equal the totals shown for all calves.
- Values reported for all diagnoses/agents are for quarters in 1992.
- In some cases, the reported total number of tests performed is a minimum because some laboratories were not able to determine the total number of negative tests performed.
- Abbreviations for laboratories used in the tables are:

ARVDL = Arkansas	CAVDL = California	FLVDL = Florida	GAATH = GA, Athens
GATFT = GA, Tifton	IAVDL = Iowa	KYMSU = KY, Hopkinsville	KYVDL = KY, Lexington
MNDVL = Minnesota	MOVDL = Missouri	NDVDL = North Dakota	NEVDL = Nebraska
NVSL = National	NYVDL = New York	OHVDL = Ohio	OKVDL = Oklahoma
ORVDL = Oregon	PRVDL = Puerto Rico	SCVDL = South Carolina	SDVDL = South Dakota
TXVDL - Texas	VAVDL = Virginia	WYVDL = Wyoming	

Clostridium perfringens Type C

	Beef					Dairy					Total				
	|---- Quarter ---- |					|---- Quarter ---- |				|---- Quarter ---- |				
Lab	2/92	3/92	4/92	1/93	TOT	2/92	3/92	4/92	1/93	TOT	2/92	3/92	4/92	1/93	TOT
CAVDL P	1				1	0				0	1				1
T	3				3	1				1	4				4
GAATH P	1		2	1	4						1		2	1	4
T	0		2	1	3						0		2	1	3
IAVDL P	2	1	0	9	12	0	0	1	3	4	2	1	1	15	19
T	138	27	1	132	298	35	41	37	40	153	189	74	39	196	498
MNVDL P	0	0	0		0	0	0	0		0	0	0	0		0
T	74	11	3		88	118	91	151		360	229	111	162		502
MOVDL P											3	0	0	7	10
T											44	35	25	92	258
NDVDL P											5	0	0	1	6
T											303	29	42	316	690
OHVDL P							0			0		0			0
T							19			19		19			19
ORVDL P		1	0	6	7		0	1	0	1		1	1	6	8
T		1	0	6	7		0	1	0	1		1	1	6	8
SDVDL P	11			4	15	1	1	0	3	5	20	1	0	9	30
T	13			7	20	2	3	3	7	15	27	4	3	17	51
VAVDL P				2	2	0				0	0	0		2	3
T				2	2	1				1	1	6		15	22

Escherichia coli

	Beef					Dairy					Total				
	Quarter					Quarter					Quarter				
Lab	2/92	3/92	4/92	1/93	TOT	2/92	3/92	4/92	1/93	TOT	2/92	3/92	4/92	1/93	TOT
CAVDL P	7	2	0	0	9	13	15	13	6	59	20	17	13	6	68
T	59	11	26	3	99	58	28	61	26	173	117	39	87	31	274
FLVDL P				5	5	1	0	0	6	7	1	0	0	11	12
T				0	0	10	4	19	0	33	10	4	19	0	33
GAATH P			3	3	6			1		1			5	3	8
T			5	9	14			4		4			10	9	19
GATFT P				6	6	1	2	4	4	11	1	3	4	10	18
T				18	18	2	11	19	14	46	2	12	19	32	65
IAVDL P	6	1	0	11	18	0	3	3	3	9	7	4	3	15	29
T	105	5	1	64	175	26	21	15	71	133	146	26	16	152	340
MNVDL P	4	1	1		6	6	7	13		26	13	8	14		35
T	74	11	3		88	118	92	151		361	227	112	162		501
MOVDL P											17	20	6	31	74
T											44	35	25	92	196
NDVDL P											45	3	5	90	143
T											321	29	42	323	715
NYVDL P	14	1	1	1	17	32	30	61	92	215	48	33	65	105	251
T	23	3	2	1	29	54	74	97	149	374	79	84	104	166	433
OHVDL P				1	1				4	4				5	5
T				9	9				33	33				83	83
ORVDL P		0	3	7	10		0	1	3	4		0	4	10	14
T		10	11	144	165		14	29	39	82		24	40	183	247
PRVDL P														0	0
T														2	2
SDVDL P	14	1	0	20	35	4	7	7	6	24	26	8	7	41	82
T	169	6	2	140	317	35	42	50	78	205	342	51	56	347	796
VAVDL P	1	11	4	7	23	1	12	20	5	39	12	25	31	47	115
T	1	11	5	10	27	1	13	26	6	47	26	27	49	114	216

Salmonella spp.

		Beef					Dairy					Total				
		|---- Quarter ---- |					|---- Quarter ---- |				|---- Quarter ---- |			
Lab		2/92	3/92	4/92	1/93	TOT	2/92	3/92	4/92	1/93	TOT	2/92	3/92	4/92	1/93	TOT
CAVDL	P	21	13	6	1	41	32	7	27	13	79	53	20	49	14	136
	T	86	49	23	8	166	90	43	126	58	317	177	93	180	68	518
FLVDL	P			0	5	5	1	1	16	6	24	1	1	16	11	29
	T			19	0	19	10	9	36	0	25	10	9	55	0	74
GAATH	P	0				0	2	5	3	2	12	2	5	3	2	12
	T	3				3	2	9	8	6	25	5	9	8	6	28
GATFT	P				4	4	2	4	4	5	15	2	5	4	10	21
	T				11	11	6	7	16	14	43	6	8	16	26	56
IAVDL	P	4	0	0	1	5	1	12	2	7	22	5	12	2	8	27
	T	123	10	1	59	193	28	36	30	83	177	166	49	32	157	404
KYMSU	P											7	1	6	3	17
	T											45	40	8	.	93
MNVDL	P		0	1		1		22	19		41		22	20		42
	T		11	3		14		67	151		218		87	162		249
MOVDL	P											3	3	2	0	8
	T											44	35	25	92	196
NDVDL	P												3	4	12	19
	T												29	42	316	387
NYVDL	P	0	0	0	0	0	1	0	3	1	5	1	0	0	1	2
	T	23	3	2	3	31	54	74	107	150	385	83	84	114	159	440
OHVDL	P				2	2		8		5	13		8		8	16
	T				9	9		19		33	52		19		83	102
ORVDL	P		2	0	7	9		2	9	3	14		4	9	10	23
	T		10	11	144	165		14	29	39	82		24	40	183	247
PRVDL	P														0	0
	T														2	2
SDVDL	P	0	0	0	4	4	1	15	13	7	36	4	15	14	17	51
	T	275	11	4	231	521	71	82	118	191	462	628	104	132	690	1554
VAVDL	P	0		0	2	2	1	1	6	0	8	5	4	8	4	21
	T	3		3	8	14	1	1	24	8	34	12	13	45	62	132

Bovine Viral Diarrhea Virus

	Beef					Dairy					Total				
	|---- Quarter ---- |					|---- Quarter ---- |				|---- Quarter ---- |				
Lab	2/92	3/92	4/92	1/93	TOT	2/92	3/92	4/92	1/93	TOT	2/92	3/92	4/92	1/93	TOT
CAVDL P	2	0	0	1	3	6	0	0	2	8	8	0	0	3	11
T	13	18	5	9	45	29	3	7	8	47	44	24	12	22	102
GAATH P	1				1	0				0	1	1			2
T	4				4	1				1	5	1			6
GATFT P				1	1			1		1			1	1	2
T				7	7			3		3			3	7	10
IAVDL P	12	0	0	1	13	2	2	0	5	9	16	2	0	6	24
T	54	3	0	13	70	13	18	6	21	58	77	22	6	37	142
KYMSU P											4	0	0	0	4
T											49	46	45	33	173
MNVDL P	0	0	0		0	1	2	8		11	1	2	8		11
T	74	11	3		88	118	91	151		360	229	111	162		502
MOVDL P											1	1	7	32	41
T											46	23	19	104	192
NDVDL P											6	0	2	17	25
T											319	29	42	322	712
NYVDL P		0	0	0	0	2	1	8	3	14	2	2	9	3	16
T		2	3	4	9	11	32	64	84	191	11	39	68	91	209
OHVDL P				1	1		1		2	3		1		4	5
T				9	9		19		33	52		19		83	102
ORVDL P		2	0	4	6		0	0	0	0		2	0	4	6
T		7	0	4	11		0	0	0	0		7	0	4	11
SDVDL P	2	0	0	2	4	2	6	3	4	15	5	7	3	7	22
T	70	7	2	36	115	27	25	51	79	182	158	38	58	154	408
VAVDL P	1				1						11	0	0	0	11
T	12				12						49	236	201	57	543

Coronavirus

Lab		Beef Quarter 2/92	Beef Quarter 3/92	Beef Quarter 4/92	Beef Quarter 1/93	Beef TOT	Dairy Quarter 2/92	Dairy Quarter 3/92	Dairy Quarter 4/92	Dairy Quarter 1/93	Dairy TOT	Total Quarter 2/92	Total Quarter 3/92	Total Quarter 4/92	Total Quarter 1/93	Total TOT
CAVDL	P	17	9	1	1	28	9	6	13	14	42	26	15	14	15	70
	T	39	24	7	3	73	31	32	28	36	127	70	56	35	39	200
FLVDL	P	0	0		0	0	0	0		6	6	0	0	9	6	15
	T	2	1		18	21	3	8		19	30	5	9	19	37	70
GAATH	P	1			2	3		1	1	4	7	1	1	1	6	12
	T	4			9	16		3	2	7	13	4	3	2	16	42
GATFT	P	0				0	0		2		2	0		2		2
	T	1				1	3		9		12	4		9		13
IAVDL	P	12	1	0	29	42	3	4	7	25	39	17	5	7	63	92
	T	99	10	0	104	213	20	27	26	123	196	133	41	27	269	470
KYMSU	P											1	0	4	8	13
	T											41	78	38	48	205
MNVDL	P	15	0	0		15	10	8	23		41	29	9	25		63
	T	74	11	3		88	118	91	151		360	229	111	162		502
MOVDL	P											10	7	7	19	43
	T											46	23	16	89	174
NDVDL	P												1	3	41	45
	T												29	42	316	387
NYVDL	P	2	0	0	0	2	1	1	0	4	6	3	1	0	4	8
	T	7	2	3	5	17	34	33	64	88	219	43	40	68	96	247
OHVDL	P				2	2		2		9	11		2		26	28
	T				9	9		19		33	52		19		83	102
ORVDL	P		2	2	27	31		2	2	3	7		4	4	30	38
	T		10	11	144	165		14	29	39	82		24	40	183	247
SDVDL	P	31	0	1	33	65	18	8	20	29	75	75	9	22	120	226
	T	273	8	2	230	513	68	74	113	185	440	605	92	126	681	1504
VAVDL	P				0	0		1	0		1	1	3	0	5	9
	T				1	1		2	6		8	14	79	57	116	266

Rotavirus

Lab		Beef Quarter 2/92	Beef Quarter 3/92	Beef Quarter 4/92	Beef Quarter 1/93	Beef TOT	Dairy Quarter 2/92	Dairy Quarter 3/92	Dairy Quarter 4/92	Dairy Quarter 1/93	Dairy TOT	Total Quarter 2/92	Total Quarter 3/92	Total Quarter 4/92	Total Quarter 1/93	Total TOT
CAVDL	P	34	14	1	4	53	15	19	33	19	86	49	33	34	24	140
	T	65	33	3	5	106	56	56	47	49	208	124	89	50	55	318
FLVDL	P	0	0	0	6	6	0	4	0	2	6	0	4	0	8	12
	T	2	1	19	18	40	3	8	11	19	41	5	9	30	37	81
GAATH	P	0	1			1	0				0	0	1			1
	T	3	5			8	1				1	4	5			9
GATFT	P	2		3	1	6	3	2	2	7	14	5	2	6	8	21
	T	1		9	7	17	3	8	16	22	49	4	8	26	41	79
IAVDL	P	37	4	0	30	71	11	14	14	45	84	51	19	14	79	163
	T	111	10	0	128	249	33	32	33	139	237	156	46	34	298	534
KYMSU	P											12	12	14	19	57
	T											47	52	43	51	193
MNVDL	P	20	1	2		23	24	28	52		104	53	35	57		145
	T	74	11	3		88	118	91	151		360	229	111	162		502
MOVDL	P											15	3	7	13	38
	T											46	23	16	86	171
NDVDL	P											9	1	1	22	33
	T											319	29	42	323	713
NYVDL	P	0	0	0	0	0	0	5	1	4	10	0	6	1	4	11
	T	7	2	2	4	14	36	32	60	84	212	45	39	62	91	237
OHVDL	P				0	0		0		3	3		0		18	18
	T				9	9		19		33	52		19		83	102
ORVDL	P		0	6	54	60		4	9	9	22		4	15	63	82
	T		10	11	144	165		14	29	39	82		24	40	183	247
SDVDL	P	43	2	0	45	108	22	14	24	61	153	113	19	42	170	344
	T	264	9	2	230	648	70	74	113	185	559	597	93	176	681	1547
VAVDL	P			1	3	4			7	5	12	17	6	10	32	65
	T			1	8	9			13	6	19	44	83	85	128	340

Cryptosporidia

		Beef					Dairy					Total				
		|----	Quarter	---- |			|----	Quarter	---- |			|----	Quarter	---- |	
Lab		2/92	3/92	4/92	1/93	TOT	2/92	3/92	4/92	1/93	TOT	2/92	3/92	4/92	1/93	TOT
CAVDL	P	19	9	1	3	32	20	20	26	23	89	42	29	27	27	125
	T	66	34	3	4	107	47	56	54	42	199	116	90	57	48	311
FLVDL	P				1	1	0	2	14	5	21	0	2	14	6	22
	T				1	1	10	4	21	12	47	10	4	21	13	48
GAATH	P			2		2				1	1			2	1	3
	T			5		5				4	4			5	4	9
GATFT	P	1			1	2		2	4	4	10	1	2	4	5	12
	T	2			7	9		6	12	22	40	2	6	12	29	49
IAVDL	P	37	3	0	17	57	9	11	13	32	65	51	16	13	52	132
	T	129	7	1	110	247	33	27	29	120	209	181	37	31	255	504
KYMSU	P											12	13	12	21	58
	T											48	74	39	47	208
MNVDL	P	25	4	0		29	36	47	70		153	81	56	77		214
	T	74	11	3		88	118	92	151		361	229	112	162		503
MOVDL	P											4	5	2	14	25
	T											52	24	21	152	249
NDVDL	P											14	3	5	27	49
	T											259	29	42	323	653
NYVDL	P	1				1	7	9	12	15	43	8	9	13	16	46
	T	1				1	18	26	26	37	107	20	33	29	40	122
OHVDL	P				2	2		6		9	15		6		19	25
	T				9	9		19		33	52		19		83	102
ORVDL	P		1	7	64	72		4	12	16	32		5	19	80	104
	T		10	11	144	165		14	29	39	82		24	40	183	247
SCVDL	P			0	2	2			1	6	7			1	8	9
	T			6	10	16			13	25	38			19	35	54
SDVDL	P	87	1	1	68	157	20	33	42	81	176	168	38	47	234	487
	T	239	8	3	215	465	62	66	104	175	407	541	80	116	645	1382
VAVDL	P	2		3	2	7		11	5	2	18	30	27	22	47	126
	T	3		5	7	15		12	21	6	39	52	59	62	116	289

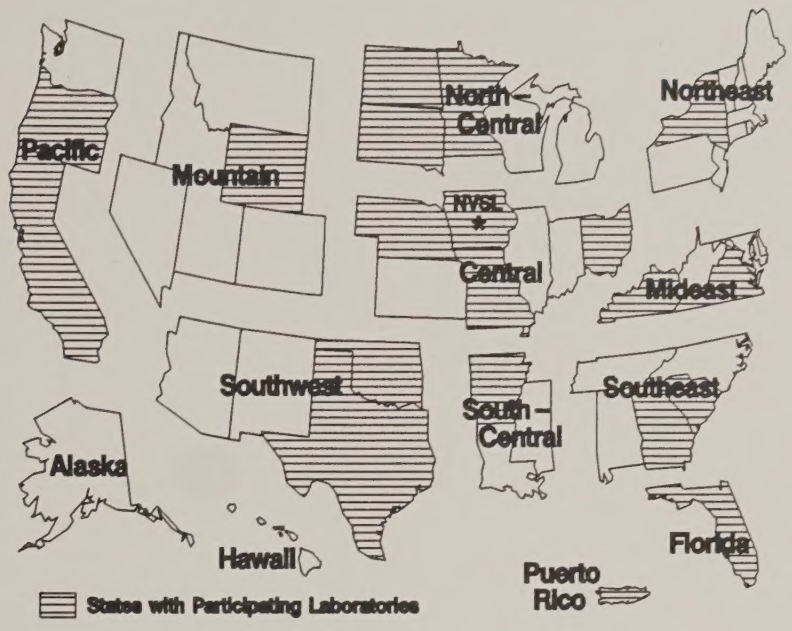
Coccidia

		Beef					Dairy					Total				
		|---- Quarter ---- |					|---- Quarter ---- |				|---- Quarter ---- |			
Lab		2/92	3/92	4/92	1/93	TOT	2/92	3/92	4/92	1/93	TOT	2/92	3/92	4/92	1/93	TOT
CAVDL	P	1	1		0	2	5			0	5	6	1		0	7
	T	14	16		9	39	38			47	85	52	16		60	128
GAATH	P	2	1			3		1	1	1	3	2	2	1	1	6
	T	0	5			5		4	4	4	12	0	9	4	4	17
GATFT	P	1		2	1	4		1	4	4	9	1	1	6	6	14
	T	3		3	4	10		6	12	22	40	3	6	15	27	51
IAVDL	P	9	0	1	16	26	1	1	1	19	22	12	2	2	42	58
	T	45	2	2	21	70	10	5	5	23	43	60	9	7	51	127
KYMSU	P												0	2	3	5
	T												76	37	47	160
MNVDL	P	5	0	1		6	5	3	1		9	11	3	2		16
	T	74	11	3		88	118	92	151		361	229	112	162		503
MOVDL	P											0	0	0	0	0
	T											52	24	21	152	249
NDVDL	P											9	1	1	1	12
	T											303	29	42	316	690
NYVDL	P	0				0	2	4	2	2	10	2	10	3	2	17
	T	1				2	18	26	26	37	107	20	33	29	40	122
OHVDL	P				1	1		2		1	3		2		3	5
	T				9	9		19		33	52		19		83	102
ORVDL	P		2	1	3	6		2	1	1	4		4	2	4	10
	T		2	1	3	6		2	1	1	4		4	2	4	10
PRVDL	P														0	0
	T														2	2
SDVDL	P	3	1	3	1	8	0	5	5	5	15	10	6	11	8	35
	T	57	3	3	18	81	18	16	34	39	107	126	22	44	89	281
VAVDL	P	1			1	2			2	0	2	1	2	5	3	11
	T	4			1	5			6	4	10	17	16	27	48	108

REGIONS OF THE VDLRS

Abbreviations for regions used in this issue are:

AK = Alaska
CL = Central
FL = Florida
HI = Hawaii
ME = Mideast
MN = Mountain
NC = North-Central
NE = Northeast
PA = Pacific
PR = Puerto Rico & U.S. Virgin Islands
SC = South-Central
SE = Southeast
SW = Southwest
UNK = Unknown



Contributing Laboratories

The following laboratories have contributed data reported in the DxMONITOR Animal Health Report. Thanks to all of the individuals at these laboratories who have worked to make this report possible.

- Arkansas Livestock and Poultry Commission Diagnostic Laboratory (Little Rock, AR)
- California Veterinary Diagnostic Laboratory System (Davis, CA)
- Bureau of Diagnostic Laboratories, Florida Department of Agriculture (Kissimmee, FL)
- Veterinary Diagnostic Laboratory, University of Georgia (Athens, GA)
- Veterinary Diagnostic and Investigational Laboratory, University of Georgia (Tifton, GA)
- Veterinary Diagnostic Laboratory, Iowa State University (Ames, IA)
- National Veterinary Services Laboratories (Ames, IA)
- Breathitt Veterinary Center, Murray State University (Hopkinsville, KY)
- Livestock Disease Diagnostic Center, University of Kentucky (Lexington, KY)
- Minnesota Veterinary Diagnostic Laboratory, University of Minnesota (St. Paul, MN)
- Veterinary Medical Diagnostic Laboratory, University of Missouri-Columbia (Columbia, MO)
- Veterinary Diagnostic Center, University of Nebraska-Lincoln (Lincoln, NE)
- New York State Veterinary Diagnostic Laboratory, Cornell University (Ithaca, NY)
- North Dakota Veterinary Diagnostic Laboratory, North Dakota State University (Fargo, ND)
- Reynoldsburg Laboratory, Ohio Department of Agriculture (Reynoldsburg, OH)
- Oklahoma Animal Disease Diagnostic Laboratory, Oklahoma State University (Stillwater, OK)
- Veterinary Diagnostic Laboratory, Oregon State University (Corvallis, OR)
- Puerto Rico Animal Diagnostic Laboratory (Dorado, PR)
- Clemson Diagnostic Laboratory, Clemson University (Columbia, SC)
- Animal Disease Research and Diagnostic Laboratory, South Dakota State University (Brookings, SD)
- Texas Veterinary Medical Diagnostic Laboratory, Texas A&M University (College Station, TX)
- Bureau of Laboratory Services, Virginia Department of Agriculture and Consumer Services (Richmond, VA)
- Wyoming State Veterinary Laboratory (Laramie, WY)

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FIRST CLASS MAIL

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